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WALES, GEOLOGY OF. Though, since the date (1794) of Mr. Aikin's 'Tour through North Wales,' the geological structure of the principality has been actively and extensively examined by Professor Henslow, Mr. Murchison, Professor Sedgwick, and other eminent persons, there still remain some points unsettled in the general classification of the older Palaeozoic strata. These difficulties are now rapidly disappearing under the continued exertions of Professor Sedgwick, Mr. Sharpe, and the zealous members of the Ordnance Geological Survey of Great Britain, directed by Sir H. T. de la Beche. These researches being still in progress, we must wait until the Ordnance surveyors have executed their important task, and solved the grandest and most inviting problem now offered in British geology, by completing a continuous measured section from the Bristol Channel to the Menai Strait, before the whole of the lower strata of Wales can be satisfactorily viewed in one clear and determinate succession of deposits. Still the knowledge we possess of the tendency of these researches is sufficient for a general outline of the mineral composition and organic remains of the whole Palaeozoic series of Wales; and it appears desirable to present such an outline, because it must be in some material points different from the opinions which may have been adopted since the Silurian researches of Mr. Murchison and the Cambrian researches of Professor Sedgwick were undertaken, though not to such a degree as to cause to these eminent persons any but gratifying sensations at the progress toward completion of their arduous undertaking.

When, in 1831, and many subsequent years, Professor Sedgwick and Mr. Murchison made a friendly partition of labour in Wales, each formed for the country he examined the scheme of classification which seemed most suited to his district. Mr. Murchison, parting from the upper limit of what we have termed the lower Palaeozoic series, and working his way downwards through sandy, calcareous, and argillaceous strata (almost unknown, except to Mr. Lewis of Aymestry, and a few intelligent residents in Shropshire, but uncommonly rich in various and successive groups of organic life), established, on a firm basis, the Silurian System; Professor Sedgwick, parting from the lower limit of the same grand series of strata, and proceeding upwards through many thick slates, and conglomerates, and a few thin limestones, in a general sense poor in traces of organic life, proposed to constitute for these the Cambrian system. These 'systems' have been adopted into all our geological works with more or less of confident reliance on their being really distinct and recognisable groups of strata, not merely parts of one grand and varied series of antecedent deposits. But the conterminous boundary of the groups, the exact line, or even the transition zone between them, was never traced. Mr. Murchison was conducted, by his inquiries downward, into the Cambrian system of Sedgwick, perhaps very deeply into it, but without clearly recognising in the slaty and conglomeratic Cambrians the altered shales and grits of the lower Silurians, and without determining the geographical area of these strata. To determine the geographical extent and geological succession of the Cambrian system was left to Professor Sedgwick, a most arduous and complicated task, the work of many years, and yet unfinished. In this labour he perfectly recognised an important truth, which all subsequent experience confirms, viz. that the remains of organic life in the lowest observed fossiliferous strata of Wales were undistinguishable, except by total number and relative proportion of the several classes of antient life, from the larger series of organic remains in the Silurian strata. That the whole of the lower Palaeozoic strata of Wales form in fact one zoological system, was the opinion of Mr. Murchison, expressed in his great work, and from that time a cloud of doubts has gradually deepened over the correctness of the classification which divided this one series of antient life into two systems of stratified deposits. Through this cloud, the only one left on the whole horizon of English stratification, light is breaking by the efforts already alluded to; and we are glad to take this opportunity, the last which may occur, by noticing some points in the geology of Wales, to bring up the knowledge of this subject to the actual date. A short summary of facts will suffice for this end, especially as Mr. Murchison's last address from the Chair of the Geological Society (February, 1843) has touched the same questions.

If a line of section be chosen from the shores of the Bristol Channel (as, for example, about Cardiff) across the mountains and valleys to the Menai Strait (a line actually chosen and partly executed by the Ordnance Geological Survey), it may be made to pass through nearly all the principal formations of Wales in a direction favourable for showing the manner of their arrangement. The general features of such a section may be as under:

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No. 1.

CAMBRIAN STRATA.
On the shore of the Bristol Channel lies and new red-sandstone, nearly level, and separated from the coal strata of South Wales. From these, on the north side of the coal-field, rise the old red-sandstone and the Silurian strata, conformable in position to the coal and mountain limestones.

The Silurian strata are in their lower parts often confused and somewhat altered by frequent occurrences of trap rocks, and in some places are made to assume a slaty structure, and this even to lose all distinct stratification. When this happens, the lower limit of the Silurian system appears untraceable; but yet, as a mass, the appearance of these rocks is different from the mixed massive and slaty rocks of the central ranges of Wales, which rise to Plym-lymmon, the Berwyns, and Snowdonia. In all of these strata the layers are not uniformly horizontal, but are often contorted near trap rocks (which are bent with the argillaceous and conglomeratic strata), and generally subject to very prominent slaty cleavage. The least confused part of this labyrinth of rocks is in the Snowdonian ranges, at least this is the part on which Professor Sedgwick's views appear most positive. Here strata rising to a thickness of many thousand feet, including slates, conglomerates, and trap bands, succeed one another with considerable regularity, the lower series being (in Mr. Murchison's view) nearly resting upon chertic and micaeous schists, and meeting unconformable beds of mountain limestone and other newer strata. These beds Professor Sedgwick conceives to be several thousand feet below the limestone of Bala, whose geologic relations have been succinctly discussed. Here limestone appeared to himself and Mr. Murchison to dip (eastward) beneath the rocks of the Berwyn mountains, which consist principally of a mass of clay-slate, in which fossils have not yet been discovered. On this point Mr. Sharpe is silent, and, gives as the result of his recent examination the Bala limestone lying in a trough between the Berwyns and Arran Fowddy, and resting on the clay-slates of the Berwyns. But between Bala and the undoubted Silurian rocks the geographical interval varies. Against the northern parts of the Berwyns the Silurian strata come in contact, but their southern parts are girdled by a broad zone of slates and other rocks, whose age is doubtful; that is to say, it is not yet determined whether they are of the last Silurian age or of some earlier date. This is not yet determined; but there is information gathered by the Ordinance Geological Survey in the country north of the Towy, which goes far to justify a certain positive inference.

This section No. 2 may now be consulted for the general view of the ordinary arrangement of the Silurian strata on the Salopian border of Wales.

Here, beneath the coal, mountain-limestone, and old red-sandstone, appears the Silurian system, in four parts, resting against the slaty (supposed Cambrian) rocks of the Berwyns. The beds marked 1 Llandeilo flags, are sometimes slaty; 2, the Carboniferous limestones contain common coal and generally capped by a certain limestone; 3, the Wenlock formation with characteristic limestones; 4, the Ludlow formation, with equally characteristic limestone and peculiar flaggy shales. If this series of strata has maintained its characters in all other parts of the border of Wales, nothing could be more easy than to determine the exact geographical range of the system. But this is not the fact. This series exists in perfection only in the eastern and southern parts of the Silurian system, in Shropshire, Worcestershire, Woolhope, Malvern, Mayhill, and Usk, and does not exist, with the same parts, in Denbighshire and a great part of South Wales. In the latter district their usual composition may be judged of by section No. 3, where, from beneath the old red-sandstone the first Silurian strata which rise to the north are somewhat doubtfully referred to the Ludlow and Wenlock rocks, but are followed by the determinate Caradoc and Llandovery series. In this series is an antecedent arch of some considerable length, the effect of it being a reversal of dip to the north, so that the Silurian strata appear to descend beneath what have been called Cambrian, and have been left under the colour apparatus of the map below. This is confirmed in Mr. Murchison's supposed map. These so-called Cambrian strata are however, certainly for many miles northward of the Towy, nothing but the Llandeilo shales, less calcareous and less fossiliferous. The seeming great dip to the north, which often occurs in these beds, is sometimes fallacious, and in fact is caused by the cleavage planes, here generally inclined to the northwards at about 70°. The true beds have however been traced by Sir H. de la Beche and the Ordinance surveyors, and they are found to be at first highly, then moderately inclined to the north, afterwards to grow flat, and finally have been proved by Mr. R. to undulate and roll into anticlinals and synclinals such as constitute the region of the interior of Wales. Section No. 4 may be taken to represent this—Comparing No. 4 and No. 5, the difference on the north side of the
farther downward, we arrive at the conclusion that beneath the Bala (Caradoc, Woolhope, Coniston) limestone occurs a vast thickness of beds of general mineral characters resembling the mixed shales (or slates) and conglomerates north of Llandilo, which are not in the lowest part of the Llandilo formation as adopted by Mr. Murchison. We further know that in these Snowdonian rocks occur several remarkable fossils or other series of organic remains than those of the Caradoc and Llandilo rocks (or, in general terms, to the Lower Silurian rocks), and must therefore believe that the Snowdonian series is coeval with that north of the Towy, or that it is an earlier stratum than the latter, unless organic remains of similar groups of organic remains. In either case the progress of classification will require the union into one great group of this whole fossiliferous series. Whether any groups which may occur below (as happens in Cambrian) or above (as in the Silurian) groups to or partiality of the rocks in which they lie in his Silurian system. Much importance was then attached to the mineral constitution of rocks and to the chemical composition of the rocks and strata generally, and to the sequence on the surface of life on the globe that geologists have arrived at a decided preference for general classifications of strata founded on their organic contents. There is danger lest this preference become an unjust partiality. In the classification of the fossils, the system of mechanical, chemical, and vital agencies leave out of view the changes of physical conditions and inorganic agencies which preceded, accompanied, or succeeded the changes of the organic world, it must be very clearly proved that the fossils are always and everywhere determined by the series of organic forms, and that these offer general, consistent, and complete types, and are on account to be exclusively adopted. If geologists should generally concede this, we must inquire whether the whole Silurian-Cambrian system possesses such a character of harmony in the assemblages of organic remains in its different parts as to demand its union in one system, and forbid the separation of it into two systems, such as the Devonian system and that below it, which I sometimes have called Paleozoic rocks? This question has not been thoroughly examined. Mr. Murchison, in his general views of the Silurian series, shows that considerable differences appear between the groups of fossils in the upper and lower Silurian strata, at the same time that there is entire identity in the brachiopods, and corals. In our judgment the amount of these differences is very nearly proportionate to that which obtains between the saurian and oolitic formations.

Whoever decides to keep these together in one (the oolitic or Jurassic) system, may consistently unite, even with our present amount of knowledge, the whole of the ancient fossiliferous rocks of Wales (below the old red-sandstone) into one Silur-Cambrian system, or one system of upper and lower Silurians. With this he may combine the view of a general constancy of animal and plant formations, and present state of geological reasoning, general in its basis, and strictly in harmony with the observed succession of organic life. Such a view would be thus stated:

**Upper Palaeozoic Strata.**

- Upper Ludlow formation. (Silurian.)
- Wenlock formation.

**Middle Palaeozoic Strata.**

- Lower Ludlow formation. (Silurian.)

**Lower Palaeozoic Strata.**

- Llandovery formation. (Silurian.)
- Cambrian formation.

Upon this plan of nomenclature the non-fossiliferous deposits below Caradoc may be called Hypostratic Strata.

The materials for this notice are partly supplied from personal knowledge on many of the points discussed, partly from oral communications from the eminent persons whose opinions are quoted, and from the publications referred to. It is to be regretted that Professor Sedgwick's excellent labours in North Wales are in great measure unknown except by incidental notices and abstracts.

(Sedgwick, in Geological Society's *Proceedings*, 1838 et passim; Sharpe, in the same, 1842, 1843; Murchison, *Silurian System*, 1809; *Address to the Geological Society*, 1844, including information of the progress of the Ordinance Geological Survey.)

**WALES, Prince of,** is the title usually borne by the eldest son or heir apparent of the British King or Queen. Before the reign of Edward I, the eldest son of the king was commonly known as Prince of Wales. Edward, the son of King David, 1277, Lewellyn and David, the last native princes of Wales and united the kingdom of Wales with the crown of England. There is a tradition that Edward, to satisfy the national feelings of the Welsh people, promised to give them a prince without blemish on his birth. Edward, in 1301, did not speak a word of English. In order to fulfill his promises, he had sent the queen, Eleanor, to be confined at Carnarvon Castle, and he invested with the principality her son, Edward of Carnarvon, then an infant, and caused the boy to be crucified, which, it is said, was not at that time the king's eldest son, but on the death of his brother Alphonso he became heir apparent, and from that time the title of Prince of Wales has ever been borne by the eldest son of the King. The title however is not inherited but is conferred by special creation and investiture; and was not always given shortly after the birth of the heir apparent. Edward II did not create his son Prince of Wales till he was ten years old, and Edward the Black Prince was not created until he was just thirteen.

The eldest son of the King is by inheritance Duke of Cornwall. Edward the Black Prince was first created duke of Cornwall on the death of John of Eltham, his uncle, who was the last of Cornwall; and by the grant under which the title was then conferred in the 11th Edward III, the dukedom is inherited by the eldest living son and heir apparent. If the duke succeed to the crown, the duchy vests in his eldest son and heir apparent; if it fails to the son, or to the grandson remains to the king, the heir presumptive being in no case excluded. The Black Prince was also created by his father Earl of Chester and Flint. By the statute 21 Richard II., c. 9, the earldom of Chester was erected into a principality, and the Black Prince was created to it, being only to the king's eldest son. Although that statute, with all the others in that parliament, was repealed by the 1st Henry IV., c. 3, the earldom has ever since been given together with the principality of Wales.

A remarkable instance occurred in the reign of the unfortunate Henry VI, in which all these titles were borne by one, not the eldest son and heir apparent of the king. Richard, Duke of York, claiming the crown, procured a act of parliament declaring that after the king's death he, or his heirs should descend in line of his father, to make this succession the more secure, the act declared his eldest son to be forthwith Prince of Wales, Duke of Cornwall, and Earl of Chester. The antiquity of the title of Prince of Wales is of no regular succession, as it were, a confirmation of the father's present right and of his own nearness in succession to the crown. Thus on the death of Edward the Black Prince, Edward III. immediately made his grandson Prince of Wales. Richard III., having made himself heir to the crown, succeeded to it in his turn, and the title of Prince of Wales, in order to strengthen his usurpation. Henry VII., again, on the death of his son Arthur, created his next son Henry, Henry VIII., having no son, created his daughter Mary, Princess of Wales; and after her illegitimacy, his own daughter, having no issue, his own succession had only been heires presumptive, yet they bore the title, being then next in succession to the crown.

The titles, at length, now borne by the Prince of Wales
are, 'Prince of Wales and Earl of Chester, Duke of Saxony, Duke of Cornwall and Rothesay, Earl of Carrick, Baron of Renfrew, Lord of the Isles, Great Steward of Scotland.'

(Selden's Titles of Honour, part ii., c. 5; Connack's Annals of the Province of Wales, 4th ed., vol. ii., 369.)

Wales, New South, extends over the south-eastern portion of Australia. Its western boundary has been fixed by the grant of the colony of Southern Australia, whose eastern boundary extends from the shores of the Southern Sea along the coast to the latitude of 39° S. lat. This boundary-line of New South Wales has not yet been determined, but as Moreton Bay (27° S. lat.) has been settled, and in the interior the sheep-stations have nearly reached the banks of the river Karuah, we shall consider that New South Wales extends to 36° S. lat. The whole of New South Wales is washed by the Pacific, and on the south by Bass's Strait, which separates it from Tasmania, and by the Southern Sea. Within these boundaries it extends from 36° to 39° S. lat. Wilson's Promontory, which constitutes its most southern point, stretches some miles south of 39° S. lat. New South Wales lies between 141° and 154° E. long., the most eastern point being Cape Byron (near 29° S. lat.). Its length from north to south is about 1600 miles, and its average width about 275 miles. This gives an area of 560,000 square miles, or somewhat more than the extent of Portugal, Spain, France and Italy taken together. About one-tenth of this immense country is within the limit of location; but the cattle-stations have a more or less extensive range of country, and the whole of the plains is occupied by mountain-ranges that distinguish that river in its whole course and all the year round. The drainage of the northern portion runs into the Murrumbidgee, which river in this way is likewise supplied with sufficient water to prevent it from becoming dry during the summer months, as is the case with all the other rivers in the plains of the interior. This river is considered as the most important for cultivation which it apparently contains. Nearly the whole of this country was entirely unknown up to 1836, and it cannot therefore be a matter of surprise that more than one-half of its surface has been surveyed only within the last few years, as for the rest it has never been visited by any European. There are no mountains rising within the range of the cattle-stations which are still unknown.

Surface, Soil, and Climate.—The physical constitution of this country is very peculiar. The interior consists of wide plains, interrupted only by comparatively small ranges of hills. The plains are so extensive that these all unite into one river, the Murray, which discharges within the territories of South Australia. On the east and south the plains are surrounded by higher land, which constitutes the watershed between the rivers joining the Murray and those which run to the sea. This watershed is in general met with at a distance of about 100 miles from the shores, with the exception of three places, at two of which itretes to a distance of 140 miles, whilst at the third it is almost at the shore. It has obtained this denomination on account of the great proportion of land fit for cultivation which it apparently contains. Nearly the whole of this country was entirely unknown up to 1836, and it cannot therefore be a matter of surprise that more than one-half of its surface has been surveyed only within the last few years, as for the rest it has never been visited by any European. There are no mountains rising within the range of the cattle-stations which are still unknown.

I. The Australian Alps.—Wilson's Promontory, the most southern headland of Australia, is formed by a mountain, which is distant from the coast by a distance of 15 degrees. This promontory may be considered as the commencement of the Australian Alps, a range of mountains which, for a distance exceeding 70 miles, runs to the west of south, and farther on, for about 100 miles, to the east of north, until it approaches 35° S. lat. So far this range seems to be composed of a single chain, from which several lateral ridges extend to the south-east and west. Its mean elevation does not appear to exceed 2500 feet, and probably it is less at some places. It has been crossed about 46 miles from its southern extremity by this coast, and at this place their surface is about 200 feet above the sea-level. Its activities both on the east and west are gentle, and are partially overgrown with forests, containing many timber-trees, mostly blue gum and black butt. Near 37° S. lat. there are snows above the snow-line, and this portion of it is called the Ajuk Mountain. It extends from the west to east for about 100 miles, but only the western part of it is always covered with snow; it is however not known to what extent, as these mountains have not yet been explored. Above Lake Corangamite the mountains do not appear to rise much above 4000 feet. From the western portion of this range several offsets branch off towards the south-west, which grow lower as they proceed in that direction, and at a distance of less than 100 miles from the sea they assume a gentle slope. The plains of the Murray River, with ridges of high and low hills, near 36° S. lat. From the eastern extremity of the

Ajuk chain (near 37° S. lat. and 148° E. long.), a range extends to the east of north, which always maintains an elevation of from 4000 to 5000 feet above the sea-level, and near 36°30' S. lat. rises to 6310 feet in Mount Kosciusko. This elevated portion of the Alps chain, which is found in February, by Count Strelski, and it would therefore seem that in Australia the snow-line in 36° S. lat. is found below 6500 feet above the sea-level; whilst in Europe, on the southern declivity of the Alps, in 46° N. lat., it occurs at 8000 feet above the sea-level.
bour is hilly, being traversed by ridges connected with the southern portion of the Australian Alps, but it exhibits a considerable degree of fertility, as is proved by several stations which had contested titles for several years before the settlement of Port Phillip was effected. But only the tract immediately contiguous to the harbour is known; the extensive country skirting the western declivity of the Southern Australian Alps, as far north as the Alkalea Ranges, has not been explored.

Port Phillip, situated at the western entrance of Bass's Strait, is a harbour of great capacity. It measures 40 miles from north to south, and as much from east to west in the widest part. The country which surrounds it is to some extent protected by the swells of the sea against the winds. Against the swell of the sea they are protected by the narrowness and the form of the entrance of the harbour, and the shoals which lie before the entrance. The country surrounding this excellent harbour is in general of superior quality. As far as it has been well examined, or to the distance of from 30 to 40 miles from the northern and western shores of the bay, it contains a large proportion of land fit for agricultural purposes; and, in the remainder, with the exception of a few tracts of granite or sandstone, for the formation of open grassy downs. Though the settlement at this place was founded only in 1837, by Sir Richard Bourke, the influx of emigrants has been so great, that several thousand acres have been enclosed since 1840, and numerous herds of cattle and sheep covered the downs. It was then already proposed to divide it into three counties: the northern district, under the name of Bourke, and the western under that of Grant; but beyond this nothing has been done. The country lying to the north-east of the harbour, towards the Australian Alps, appears to offer less advantages, but as no account has been published of it, it would be premature to decide this point.

The North-east coast of Port Phillip the watershed between the rivers falling into the Southern Sea and the Murray occurs about 45 miles from the northern extremity of the harbour, but farther to the west it is between 80 and 100 miles from the sea-shore. On both sides of the watershed the country is hilly and broken, and between 50° and 60°, it rises into mountains. This hilly tract is in general from 30 to 40 miles across. To the south of it is an extensive plain, which descends gently to the sea-shore. Near the sea it is almost level or slightly undulating; but farther north it is excessively elevated, and between 65° and 70°, it rises to 700 feet above their bases. These single hills are most numerous in the vicinity of the hilly tract along the watershed, and among them is Mount Boninyon, which rises 1750 feet high. These hills are covered to a considerable degree of fertility. The worst portion is that which lies due west of the colony of Port Phillip, and extends from the River Numerwillin, or Lea (144° E. long.), to the River Hopkins (142° 43'). It is about 60 miles long, and from 20 to 30 wide, and very wooded, and the best soil is found at their bases. As however the soil in this plain is not of first-rate quality, it has not yet attracted the attention of settlers.

That portion of it however which lies north-west of the colony of Port Phillip, and is comparatively very hilly, is known to have a very good soil, and is well-timbered; probably it will in a few years prove the best of the several tracts. It is however on this plain that the country of the Grampians, though at some distance from them, a very large swamp, which, with several other swamps surrounding it on all sides, covers many square miles in extent.

The best portion of Australia Felix is that which lies within the hilly tract on both sides of the watershed. It is remarkable that nearly all the ridges by which this tract is overtopped do not run in the direction of the watershed. It crosses it near its highest part. On the eastern side these ridges rises to the elevation of mountains, and has been called the Grampians, which name is appropriate if their elevation only is considered, but the extent cannot be compared with that of the Scottish range of that name. The Grampians of the South extend from south to north about 54 miles, between 37°40' and 36°50' S. lat., and occupy a width of 20 miles. They are supposed to consist of two ranges: that seen from the east is called the Serra, on account of its numerous summits, and nearly in its centre is Mount so-called Grampians, which is 4500 feet above the sea-level. That chain which is seen from the west is called Victoria Range. The eastern chain terminates on the south abruptly with two high summits, Mount Abrupt and Mount Sturgeon, which is 1071 feet, above its base. The Grampians are surrounded with extensive forests of fine tall timber-trees of eucalypti.

The country which is drained by the rivers originating in the southern portion of the northern break of the mountains appears to be the most fertile tract of New South Wales. It is abundantly watered by the Nangaeas, or Glenelg, and its tributaries. The soil is black and rich, several feet deep, and rests on a subsoil of clay. In its natural state it is the appearance of a great park, thickly studded with clumps of casarum and other trees, and, as thick forests are not frequently met with, the ground almost everywhere is covered with excellent herbage. But near the banks of the Nangaeas are low tracts, which are somewhat broken, and where the appearance of a mallows and the surface of the higher portion of this plain is strongly undulating, and on it are found many small sandhills. This fertile country is supposed to extend 50 miles from south to north, and somewhat more from east to west along the whole distance from the sea, some cattle-stations have been established in this country since its discovery in 1836.

The hilly tract of the watershed east of the Grampians has by number of rocks, several round hills of moderate elevation, and many narrow valleys traversed by clear and beautiful streams. In some parts the hills are covered with wood; at other places free from wood, but overgrown with grass to the top. All those which are covered with grass afford excellent pasturage, and it is probable that all these tracts are fit for cultivation, but no part of it has been occupied by settlers, except along the road which leads from Port Phillip to the Murrumbidgee.

Between the mountain region of the Australian Alps on the south-east, the course of the Murrumbidgee and Murray on the north, and the boundary-line of South Australia on the west, lie the plains of the Murray River. These plains extend from the sea to a distance of 600 miles from east to west, but our knowledge of this country is very imperfect. We only know that it is very well
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watered, all the rivers which drain it rising in the moun-
tain-region of the Australian Alps, the hilly region of the
watershed, or the Grampians, and that the larger of these
rivers, as the Milawa and its tributary the Bayungs, flow in
wide bottoms, sometimes eight or ten miles across,
which bottoms are overgrown by high trees, partly swampy
or covered with lakes and ponds, but exhibiting an extra-
nodary degree of fertility in the vigour of their vegeta-
tion. In general the water levels are low, or very level or
slightly undulating, and only hilly where they
approach the more mountainous tracts on the south
and south-east. In some places are found salt lakes in con-
siderable numbers, but in general these plains are open,
grounds covered with grassy or low clumps of
wood. Even at a considerable distance from the
hanks of the rivers water is not scarce, as there are nu-
erous hollows in the plains, which generally contain
water; some parts so much so that their waters are con-
sidered valuable for clients after heavy rains. As far as
the plains of the Murray River have been visited by travellers, they are cer-
tainly fit both for cultivation and rearing of cattle. No
settlements have been made in the plains, except along
the Murray for the past two years. There is an area which
they have extended to the west of 147° E. long.; but the
difficulty and expense of bringing the wool and the produce
of the dairies from this distance to Sidney are such, that
of late years the advance of the cattle-stations along the
Murray has not been very rapid. But it is hoped that the plains of the Murray River will be
settled by emigrants advancing from the southward
through the fine country watered by the Nangeela; and to
favour the settlement of this immense tract by a more
extensive and permanent system of settlement, the govern-
ment of New South Wales has lately been established a
settlement at Twofold Bay. This bay extends twenty-six miles from east to
west, and ten from north to south, and has good anchor-
geage on its western shores, in four, five, or six fathoms, it
is open to the south-east winds, and during the south-
western gales gets into the anchorage, causing a
heavy surf on the beach.

As no part of Australia Felix had been settled before 1837, the accounts respecting its climate which we possess are
very few and scattered. From the observations of hasty travellers who have visited it, we learn that
rains are by no means so scarce as in the great plains of the interior or in the countries along the eastern
coast; and as the winds to which this country is most ex-
posable, from March to August, are usually attended with heavy rains, it is supposed that
this country will be less subject to such frequent and
long droughts as the old colony. In winter, frost occurs along the
watershed, and hoar-frost is experienced even on the
lowlands.

III. Gippsland is the name which has lately been applied to
that portion of New South Wales which from the eastern declivity of the southern portion of the Australian Alps and the Ajuk Range descends to the Pacific. The
seven and the sea a ridge of moderately high hills
bears the name of the Long Beach, as in its whole extent, for
200 miles, it extends in a continuous line without any
indentation, curving however a little in the middle. The
shores are low and sandy, but at the back of them the coun-
teries rise into hills. Gippsland extends along this shore from
the Southern Australian Alps to 148° E. long. It consists of an inclined plain, which however near the mountains appears to descend with great rapidity, as in the
mills from which it is raised; but the plain is not above sea-level. The northern portion of this country is traversed by
several ranges of hills, which detach themselves from
the Ajuk Range and run south by east. They are of con-
siderable elevation near the principal range, but grow lower as
they proceed southward, until they cease at a distance of
several miles from the shore. The valleys are of moderate
width, but grow wider towards the termination of the ridges.
The hills are rather steep, but in general well
wooded. The valleys exhibit a considerable degree of
fertility, and some cattle-stations have been established in
them. In the centre of Gippsland are plains of consider-
able extent, which are covered with open forests, and
readily to receive and maintain numerous herds of cattle.
These plains however do not extend to the shore, for be-
tween them and the sea a ridge of moderately high hills
stretches parallel to the sea between the mouths of the
rivers Barney and La Trobe. These hills are thickly
wooded. The southern portion of Gippsland is traversed by several offsets of the Southern Australian Alps,
which are covered with forests of blue, green, and black
bark, in which numerous timber-trees are found. The
whole of Gippsland is abundantly watered by several
streams, running from sixty to seventy miles, but it is not
known if their mouths are deep enough to receive small
vessels. At the southern extremity and on the eastern
ingerie, and on the north-western, are encouraged by
the constant occurrence of small vessels, and full of shools.
It is stated that in the summer months the thermometer at nine o'clock in the morning generally rises to
86°.

The country extending north-east of Gippsland to the river Murray, lies enclosed by the southern boundary of the
settled part of the colony, has not yet been explored in the
interior. At Cape Howe the coast begins to trend due north, and changes its character, being in general rocky
and high, and the plains, which are well watered, are
not so fertile, but which the most important is that of Twofold Bay, a tolerably
good harbour even for large vessels, in which a settlement
has lately been made, from which the adjacent country in a
short time will probably be explored. Not far south of
extension, Mount Dromedary, and rises to 3000
feet above the sea-level.

IV. The Connecting Table-lands. -The most northern
range of the Australian Alps, called the Warragong Chain,
was reached by a party of officials in December 1835,
circling the extremity of this range, changes its northern
course into a western. The Warragong Range extends
nearly south and north, and along its eastern base lie
extensive plains. The most southern of these plains, as
those of Gippsland, are known in the British Colonies by
name of Monero or Monaro Plains, and are famous in the colony
for the large herds of cattle and numerous flocks of sheep
which find there abundant pasture. These plains extend
a considerable distance south of 36° S. lat. Less extensive,
connect to one another and farther north the
eastern portion of the Warragong Range are Yass Plains
and the hilly tract enclosing Lake George. The
extended plains however do not terminate with the range of
the mountains, for there extend the Bredalbane Plains, about forty miles farther north to the
southern extremity of Crowbook Range, which con-
stitutes the southern part of the Blue Mountains. The
last-mentioned plains occupy a width of about fifty
miles, and extend from the southern coast until the
Shoalhaven River runs. Along these plains lies the
watershed between the rivers running east and west, as
some of the sources of the Lachlan and Murrumbidgee,
which run to the west, and those of the Shoalhaven and
Murray, which are found in the southern and eastern part of
gassy land, or of open undulating downs enclosed by
eminences of little height, which separate the plains from
one another: they all afford excellent pasture for sheep,
and cultivation also in many parts carried on with suc-
taneous success. It is remarkable of them is Lake George, a sheet of water
seventeen miles in length and seven in breadth. There is no
outlet for the lake, though it receives no less than four
mountain-streams from the eominences north of it. The
water is slightly brackish, but quite fit for use. In long
droughts it dries up, and then resembles a grassy
meadow, not unlike the plains of Bredalbane. There are several
other lakes to the east and west of Lake George; they are
substantial and the longest of them is 20 miles above
feet above sea-level. These lakes occur at more than 2000 feet above the sea-level, and in winter a considerable degree of cold is experienced on them. Frost occurs for several weeks nearly every
night. As in these parts no mountain-chain separates the
countries lying together, the winters are of
sufficiently good in these parts to grow in them potatoes and gooseberries, for both of which the
climates of Sydney is too hot, grow luxuriantly. The upper
W A L

valley of the Shoalhaven River contains a considerable portion of good land. In proceeding westward the river sinks deeper and deeper under the adjacent plains, and where it approaches its north-eastern great bend it flows in a ravine about 1500 feet below their common level. The precipices of this ravine, consisting at one part of great rocks, and at another of limestone hills, give a peculiar grandeur to the scenery of this part of the Shoalhaven River.

The country to the eastward of Shoalhaven River, that is to say, between it and the sea-coast, is very wild and mountainous. It is full of high hills and short ridges, the summits of which generally rise to a level, which, in places, where the plains west of the river; their tops present sometimes tittle plains, but as the hills are composed of sandstone destitute of a layer of soil, they have as little vegetation on them as the steep declivities of their sides. Near the coast, where these summits are lower, the sandstone is covered by a layer of soil, but with the exception of a few tracts of moderate extent, the soil is poor; it is somewhat better towards the south, but even there of indifferent quality.

The coast is everywhere high, and en er on the coast places where inlets occur, which terminate with low and thinly swampy grounds. Indentations are rather numerous, but none of them can be called a harbour, except Jervis Bay, which is about eight miles long from south to north and three miles wide at any part. Its eastern slope is a great sandstone cliff, and in that part of the coast, from Port Jackson, it still affords good shelter and safe anchorage, being divided from the sea by high rocky masses, and in general it is from 9 to 12 fathoms deep. It is intended to found here a town, and to make a road through the land, for a short, but the country, the increasing settlements on the Murrumbidgee and in Australia Felix may be enabled to produce the their industry with less expense to a place where it can be shipped.

V. The Blue Mountains begin on the south with Cockbundoon Range, near 34° 30' S. lat., and extend northward to the Monundilla Range, which runs from east to west near 32° 40' S. lat. Their length therefore does not exceed 130 miles. Towards the southern extremity of the range its southern slope is the most magnetic. The railway leading from Sydney to the interior, is about 60 miles across; and at its termination in the Monundilla Range, probably more than 70 miles. Its eastern edge runs along the ridge which encloses the Liverpool River, the last of the set, crosses the Warramunga, and extends along the western bank of the Nepean, Hawkesbury, and Macdonald Rivers, terminating at the source of the last-mentioned river in the Monundilla Range. The western edge of this mountain-system has been discovered in 1831. It begins from the sources of the Wollondilly River (149° 30' E. long. and 34° 30' S. lat.) nearly due north, traversing Fish River some miles above Bathurst, at the place where it joins Campbell River, and from this point to run to the east on the high Tablelands of the Blue Mountains Range (150° E. long. and 32° 30' S. lat.). The southern portion of the range, or that contiguous to the Nattai River, does not seem to rise to a great elevation above the general level of the country (2000 feet), but it consists of sandstone, probably destitute of vegetation, and is consequently uninhabitable. Seen from a higher elevation it presents the appearance of a flat country whose surface is hollowed and cracked out into the wildest ravines, deep and inaccessible. No road traverses this part of the range. The only road runs along the ridge which descends from Sydney to Bathurst. It runs along the line of high land which separates the ravines of the valley of the river Cox on one side, from those which belong to the valley of the Grosse on the other. The mountains, it appears, were subjected to an exceedingly steep activity to an elevation of about 1000 feet above the flat country on the banks of the Nepean River.

Farther on, the rise is more gradual, till the highest part of the road, near King's Tablelands, which are the base of the Monundilla Range, is obtained. The face of the mass of sandstone over which the road runs is intersected by ravines, very steep in proportion to their height: near the highest part of the road, the profound depth of the ravines, enclosed by rocky precipices, imparts a wild grandeur to the scenery, hardly to be conceived. The rocks are in most parts overgrown with stunted trees. There is scarcely a patch of land along this part of the road fit for cultivation, except near an inn, which is 2800 feet above the sea, and where gooseberries and potatoes of excellent quality grow. Only two summits, Mount Hunter and Mount Twynam, rising about 12 miles north of the road, rise considerably above the level. The descent from the more elevated part of the mountains at Mount York is not less precipitous than the ascent from the east. West of Mount York the road passes through some deep valleys, which have a peculiar granite, and their surface is thinly wooded and grassy. On Stony Range, the western ridge of the Blue Mountains, the soil is of red colour, rather rich, and bears trees of uncommon magnitude.

The Liverpool Range and the Connecting Ridge.—At the distance of from 60 to 70 miles north of the Monundilla Range is the Liverpool Range, running east and west. This range is of great extent, as the lofty mountains which enclose on both sides the river-basin of the Manunilda, which form the Monundilla Range of the settled part of the country (32° S. lat.), are to be considered as its eastern prolongation. On the west it appears to be connected with the Warrambungle or Arbuthnot Range, which is the exception, rather 1500 or 2000 feet above the base. It appears like a large wall with numerous notches in it, formed of the Monundilla Range, which is a range of hills, from which numerous torrents descend, which feed several perpetual streams. Where the slope is not too rapid, it is thinly wooded. On account of the steepness of the ascent only two places have been found at which it can be traversed with ease. The western, known by the name of Par- dora Pass, is near 150° E. long.; and the eastern, called by the natives Heckmadiey, occurs west of 151° E. long. When the summit of the pass is attained, a short descent brings the traveller to the Liverpool Plains. This evidently an exception, as there is no sign of any inhabited European settlement, and from which numerous torrents descend, which feed several perpetual streams. The Liverpool Range is connected with the Monundilla Mountains by what may be called the Connecting Ridge. This ridge lies between 33°10' and 34° 20' S. lat. It begins on the Monundilla Chain, near 150° 20' E. long., and runs due west for about 140° 30' E. lat. It crosses the New South Wales coast near 30° north-east, and in that direction meets the Liverpool Range some miles east of Pandora Pass. It divides the affluents of Goulburn River, a tributary of Hunter River, which falls into the Pacific, from those of the Cudgegong and Welling River, a tributary of the Charles River. As for the last-mentioned tracts the surface is so level, that the watershed is covered with extensive swamps. A considerable portion of this ridge is without trees, overgrown with bushes and grass; but elsewhere the country is covered with woods of tall trees, iron-bark, stringy-bark, and box. There are some tracts where water is scarce, but in general this ridge is sufficiently watered, and settlements have of late years been made in these tracts (May 1836), and it is probable that the commercial capital of this part of the colony will be transplantated to the mouth of the Hunter River, though the harbour of Newcastle cannot be compared to that of Sydney.

VII. The country between the Blue Mountains and the Pacific.—The line of coast between the mouths of Shoalhaven River (north of 33° S. lat.) and Hunter River (north of 35°) presents a range of bold perpendicular cliffs of sandstone, lying in horizontal strata. These cliffs however
are in many places interrupted by sandy beaches, behind which the country is low and flat, the high land retiring to a considerable distance. The spaces now occupied by sandy beaches appear at no very remote period to have formed the entrances of bays and arms of the sea. In many places they are now partly filled up, but there still exist extensive salt-water lagoons, separated from the ocean only by a bank of sand, through which the sea yet occasionally forces a passage.

A range of hills north of the Shoalhaven River, which it runs from west to east. It is formed by a remarkable range of high land, which traverses the whole country between the Blue Mountains and the sea, being connected with the former at the source of the Nettai River, and with the latter at Mount Marathon. Of this it must be observed that it extends south-east to the very shores of the sea, between Kiama Head and the mouth of the Shoalhaven River. The highest part is known as the Mittagong Range. The more elevated portion of this tract, which consists of rugged ranges, is a desert, and which and only covered with shrubs. Its southern slope is furrowed by deep ravines, which are hardly accessible except from the Shoalhaven River, into which they open, and on their declivities are only small tracts fit for cultivation, but the soil is poor. Nevertheless, this tract, which along the sea-shore is a lofty range of trap-rocks, called Illawarra, possessing a very rich soil, which in its natural state is buried under matted creepers, ferns, trees, cedar, cabbage-trees, and a luxuriant tropical vegetation, nourished both by the wealth of the soil and the moist sea-breezes, is the southernmost part of the sea. The extent of cultivable ground is small, but it yields most abundantly all kinds of grain and other vegetables. The forests constitute the riches of the settlers in this district. The trees are high and make excellent timber, especially a kind of cedar, of which a great number of boards go to Sydney, though the transport is very expensive, as the country at the back of the Illawarra Range is covered with offsets from the Mittagong Range, which, by their declivity, cause great obstacles to the transport of any heavy article.

From the ravines of the Mittagong Range the country as we proceed northward opens gradually into a kind of plain, the best portion of which is known by the name of the Cow Pastures. This name is derived from a herd of wild cattle which were found pasturing on them when they were discovered. The surface of this plain, which contains upwards of 10,000,000 acres, consists chiefly of undulating thirty-wooded hills, covered with a sward of fine dry native pasture, and with small groves of the most fertile description, producing wheat equaling in quality and quantity the best in England. Some tracts adjoining the river Nepean, which drains this plain, were originally clear of timber; and as they are intersected with ponds and salt-water lakes, which are always considerably flooded after a heavy fall of rain, and consequently make excellent meadows. Cattle abound on this plain, and also sheep; the wool is considered the best in the colony. In the middle of the Cow Pastures is the Raglan Range, an isolated eminence which extends about 8 miles in a general direction between west-north-west and east-south-east; it is very level on some parts of its summit, and so very narrow in others, while the sides also are steep, that the name it has obtained is very appropriate and descriptive.

The Cow Pastures extend over the northern districts of the county of Camden, and the countries contiguous to them on the east and north contain the best portion of Cumberland. The late-mentioned ridge along the sea extends only a few miles inland south of Botany Bay; but between Botany Bay and Port Jackson it reaches the vicinity of Paramatta and Liverpool. The land immediately bordering upon the coast is of a lofty and rugged description, and is frequently sprinkled with stunted bushes. The crops it yields are so scanty, that it would not be cultivated were it not for the vicinity of the capital of the colony. At a distance of from 10 to 15 miles inland the country is somewhat better, and thickly covered with evergreen forest-timber and underwood; but the clayey soil is of indifferent quality, and the labour required for clearing it has been an obstacle to settlements. Beyond this commences the fertile portion of the country, a plain extending from south to north about 40 miles, from Appin on the south to Windsor on the north, with an average width of about 20 miles, so that it is nearly equal in extent to Surrey. The surface of this extensive tract is gently undulating, and rises only in a few places to moderate and isolated hills with a gentle activity. The soil in general is very good, consisting of decomposed vegetable matter, and is underlaid in places by a bed of sandstone, which extends over the declivities of the hills. Prospect Hill, which is the most conspicuous eminence in the country, is cultivated to the summit. Nearly the whole tract could be cultivated with advantage, but it is cultivated only to the limit of the original timber. It is however very generally enclosed by substantial fencing, and affords good pasture for cattle. The rich red soil, derived from the subjacent trap rock, produces crops as abundantly now as when it was first settled, and has a great fertility, with a deep, strong, and brackish, and has a nauseous sweet taste; but in the fresh-water holes it is good, and much relished by the cattle. There seems to be a considerable portion of saline matter in most of the lands of this tract, as it is often seen in dry weather like hoar- frost upon the ground in the vicinity of ponds.

Along the banks of the Hawkesbury are alluvial lands, which exhibit an extraordinary degree of fertility, having yielded one crop of wheat in a few months, and the most of maize in each year for more than 30 years. These lands are exposed to occasional terrible floods, which take place not at certain periods, but irregularly, often after a lapse of many years, and sometimes when the crops are still on the ground. These excesses of water originate in the peculiar nature of the rivers and of the climate. The rivers of this portion of Australia do not run, as in most other countries, in bottoms, but wind in a tortuous course between high grassy banks covered with heavy timber and brushwood. The banks of these rivers are often made to rise to a considerable height above the river, and are frequently isolated by tracts of waste or uninhabited, and sometimes kept so by the natural force of the floods, which are caused by the irregularly rising and falling of the hilly surface of the country in which the upper branches of the Hawkesbury have their origin, the waters are not quickly imbibed by the soil, which consists of indurated clay. They therefore sweep along the surface with irresistible force, and accumulating in the bed of the river, they make it swell with inconceivable rapidity. Its tortuous course, and the fallen trees which are in some parts very numerous, especially where it forces its way through the heavy fall of rain, and is only a few, thickly studded with boulders and rocks, over which only stunted trees are thinly spread. These forests are composed of Bankia and grass trees (zanthorhea), which are usually found in sandy soil where nothing else can grow. These trees always suggest the idea of hopeless sterility. This tract is quite uninhabited, and uninhabitable, even for the aborigines. It is about 25 miles long and 15 wide. It is surrounded on the north-west and north by the Hawkesbury, which flows here in a very deep valley between rocks,
which rise to 600 feet, and are nearly perpendicular; at some places they overhang the river. In this deep chasm the river itself is smooth as a mirror, and affords access by boats and swimmers. The land adjoining is covered by small patches of alluvial soil, which occur alternately on each bank, and comprise farms of from thirty to a hundred acres.

The country north of the Hawkesbury, as far as it is drained by torrents which join that river, is as barren that south of it, but rather more mountainous, and some of the hills rise to a considerable elevation. It is composed of sandstone, a stone which have watercourses from it, except a few isolated heights, which generally consist of trap-rock, and are covered with a tolerably good soil and very heavy timber.

The land is the very lowest part. The alluviums which are drained on the north and south sides of the river, are very much less extensive than those of the Hobartville and Goulburn, and the river has a very different character from that of the Hobartville. The Goulburn flows more or less from west to east, and the Hawkesbury from north to south. The course of the river is so much regulated by the level of the land, that there is a very large difference between the width of the river at different parts of its course.

The land of this district is drained by three great rivers, the Hawkesbury, the Goulburn, and the Liverpool, and a smaller one called the Hawkesbury, which flows from north to south. The Hawkesbury is the most extensive of the three, and has a much larger area of alluviums than the other two. The Goulburn is a very large river, and has a considerable extent of alluviums. The Liverpool is a small river, and has a very limited extent of alluviums. The Hawkesbury is drained by the Goulburn, and the Goulburn is drained by the Liverpool. The Hawkesbury and the Goulburn are both very large rivers, and have a considerable extent of alluviums. The Liverpool is a small river, and has a very limited extent of alluviums. The Hawkesbury is drained by the Goulburn, and the Goulburn is drained by the Liverpool. The Hawkesbury and the Goulburn are both very large rivers, and have a considerable extent of alluviums.
lian Agricultural Company has acquired the property of this
country, it has been ascertained that a considerable portion of
it is not much inferior to the country situated in the
northern portion of Hunter Basin, the bottoms of the rivers
being alluvial, and the higher grounds, which rise only to the
elevation of moderate hills, being clothed with thin
forests and affording tolerable pasture for sheep. The
most southern portion however between Port Stephens and the
Hunter is a low tract, covered with sand, and a useless
waste, a vast expanse of more or less a barren-bar, so that one vehicle
only can enter it: those of larger description are compelled
to anchor outside.

IX. Countries contiguous to the western base of the Blue
Mountains.—Though all the countries lying on the westward
boundaries of the lower counties have been included in our
location, we are very imperfectly acquainted with the fea-
tures and productive powers of a considerable part of
them. The most southern districts, or those which con-
stitute the counties of King and Georgians, are entirely
unknown, as no satisfactory account has been published
respecting them. Mr. Bennett, who traversed a portion of them in his 'Wanderings,' limits his narrat-
tive to a few observations, from which we learn that
despite of the road leading from Sydney to Bathurst and the banks of the river Abereromny
consist mostly of swampy tracts, which are very little available
for the purposes of agriculture or as pasture-grounds.

But south of the river he found the country mostly traversed by
a few wooded, and even level tracts, affording good pasture for sheep, being called open
forests.

The country north of 34° 10' S. lat. is much better
known. A very hilly and broken tract, connected on the east
with the Blue Mountains, stretches for some
miles along the sides of Belubula River. It contains several summits, which rise
to the elevation of mountains, among which the most
elevated is Mount Lachlan, which probably attains 3000 ft.
above the sea-level. This tract at its western extremity
(northward from 34° 30' 33° 30' S. lat.), and separates the affluents of the Ma-
quarie River from those which run westward into the
Lachlan or Calare. Though comparatively narrow, it rises in
some places to a great elevation; the highest of its
summits, Conobals, which is not far from its southern
extremity, attains 4461 feet above the sea-level, and is higher
than the most elevated pinnacle of the Blue Mountains.

The Coutombalas, which are not far from the northern ex-
tremity of this tract, are also elevated, but not so
great a distance. Their elevation has not yet been deter-
mined. Between the southern portion of this western range
and the Blue Mountains are the Plains of Bathurst, which
are twelve miles in length and about five in width. They
are a level tract, tolerably high, not unlike the South
Downs near Brighton, presenting on their surface consid-
erable indurations. The highest parts of these elevations or
knolls are generally covered with deep grasses or bogs, but
otherwise these downs have a dry soil, and are em-
ervatingly destitute of wood, and producing different kinds
of nutritive grass, they afford excellent sheep-walks, but there
are also tracts fit for cattle; the cheese and butter made
here in great request at Sydney. The Plains of Bathurst
are more than 3000 feet above the sea-level.

The remainder of this region, extending northward
on both sides of the Macquarie River, and north-eastward
over the countries lying on the banks of the Cudgee-
gong to the base of the connecting Ridge, exhibits great varieties in its surface and products, and may be said that the
surface is undulating, though the tracts which are farthest from the banks of the rivers
generally rise into hills, which in some places are rather
high. There occur also levels, but they are usually of
short extent, and do not remain long inundated during the
greatest part of the year. The hills in many
places are rocky, and only overgrown with stunted trees,
whilst in others they are covered with grass, and well
though not thickly timbered. Between them are some
narrow valleys, producing abundant pasture for cattle.

At a few places the undulating country is destitute
of water, but these tracts are not of great extent. Many
of the small streams which drain this country are dry in sum-
mer, but well filled after rains. The larger ones have
always water, though it is much reduced after long droughts,
which are frequent in this region. A great portion of
this tract appears to be well adapted for sheep, and this is
proved by the increasing number of sheep-farms which are
spreading over it in all directions. It does not seem
that there is much land fit for growing wheat or other grains;
very little at least has till now been grown, except in Wel-
lington Valley, an extremely fertile tract of alluvial land,
watered by the River Bell, one of the principal tributaries of the
Macquarie. It lies east of the high summits of the Blue
Mountains, and is some 15 miles long, and more than a
mile across where it is widest. In this valley there are
very remarkable caves, in which fossil remains of animals
have been found.

At the distance of about 25 miles from the range on which
the summits of Conobals and Coutombalas stand, is another
tract of heights, which runs nearly parallel to it, along
149° 25' E. long. Its southern portion is called Croker
Range, and its northern Hervey Range. This range has
only been explored at two or three points by Lieut. Colon,
who very imperfectly known. On its western declivity are
the sources of Bogan River, one of the affluents of the
Darling. The country lying east of this range appears, as
far as is known, to have an irregular hilly surface, drained
by numerous watercourses running northwards into the
Macquarie, or southward into the Lachlan; but many of them
are dry in times of drought, or contain only stagnant water
in the deepest depresstions of their beds. Some shee-p-farms
have of late years been established in this hilly tract,
and some small villages have been formed to which the settlements of the whites have extended. On
the west of Croker and Hervey Range begin the great
desolate steppes which extend between the Darling and
Lachlan rivers.

Countries along the Pacific from 32° 26' S. lat.,
or from the mouth of Manning River to Double Island Point.
The Coast Range, or the high land separating the
rivers falling into the Pacific from those running westward into
the great plains of the interior, is probably in most places
from 150 to 300 miles from the sea; it is a very lofty
range, as it has only been minutely examined at two or three
places, it remains uncertain if that range always runs parallel
to the coast, or in some places retreats farther from it. The
cost-line of this tract, extending about 500 miles, is mostly
covered with low and sandy, being broken up at intervals by rocky
points. But in some parts, especially north of Trial Bay
(30° 50' S. lat.) and south of the mouth of Clarence River, are
tracts of coast many miles in length, where it is rocky and
rises to a considerable elevation, but even here no inde-
pendent settlements have occurred, and villages and
harbours are only found at the mouths of the numerous
rivers. The country which lies at the back of this coast
is much more mountainous than that portion of the
country which lies south of Manning River along the Pacific.
Numerous ranges divide and traverse this
range, and traverse the country in several directions.
Their sides are mostly steep and overgrown with thick
forests, which is one of the reasons that has retarded the
exploitation of this country, so that till this day it has
remained unknown, and was only discovered a few years
ago, though some parts of the country have been
penal settlements nearly for 30 years. There are still
some tracts of considerable extent which are blanks on our
maps. The imperfect account we have obtained of these
countries would suggest the idea that by far the greater
part of them is occupied by elevated mountain-ridges. As
far as it is known, the valleys along the rivers are only of
moderate extent, and occupy probably less than one-fourth
of the surface of the country, they rise to a great elevation.
The Three Brothers (31° 49'), only from 3 to 5 miles from the shore,
are visible at a distance of 50 miles at sea. West by north of them is Mount Sea-
View, which is supposed to rise 8000 feet above the sea-level.
Another island to which is attached a very
swampy tract of land, and which rises to more than 4000 feet. Mount Warning, about 12 miles from the
shore, near 28° 25' S. lat, is considered by Minders as the
highest summit visible from the Pacific, and its elevation
is estimated by him at 3300 feet; to the west of it is Mount
Lindesay, rising 7000 feet above the sea level; but the
high rocky masses seem to cover an extensive tract of
country contiguous to the Coast Range, and to be buried by
narrow cliffs, by which the waters collected on the
mountains find their passage to the lower level. This is es-
pecially the case with the country near 31° 3' S. lat., where the
MacLeay River runs for a great distance in a narrow glen whose sides rise 900 feet above its bed; and above this glen it forms two falls, one 235 and the other 150 feet high.

In the narrow valley of the Manning River, which is said to be navigable 20 miles from its mouth, a few settlements have been formed; but at Port Macquarie and on the banks of the Hastings River the population has within a few years so increased, that this district, with the adjacent valleys of the Manning and MacLeay Rivers, have been formed into a county. Port Macquarie is a bar harbour, admirably adapted for ships to anchor. It is a fine anchorage for a great number of vessels. This harbour is formed by an estuary, into which two rivers fall, which however are designed by one name, the Hastings. About three miles of the river is wide and covered with a forest of all the timber however are rather high, but nevertheless subject to sudden inundations. The soil on the margin is generally a rich alluvium, thickly timbered with cedar-trees and matted with vine-brushes, which renders the clearing of the ground laborious and expensive. The large cedar-trees yield good timber, which is shipped to Sydney. The hills surrounding the lower tract are thinly wooded and serve as sheep-walks. This is the most southern district in New South Wales where the sugar cane has been cultivated. The trade with Brazil is carried on regularly. Tobacco is also grown to some extent. Both rivers falling into Port Macquarie are navigable for several miles from their embouchures.

North of Port Macquarie is the valley which is drained by the Barwon River, of the existence of which government was unacquainted up to 1838, though it had for some time before been visited by woodcutters, who obtained excellent cedar-timber there.

The mouth of the river is at Shool Bay, 29° 20' S. lat. The bar of sand at the mouth of the river extends almost two miles; the river rises from a narrow glen, whose sides rise 900 feet above its bed, as already observed. Below this place the river runs through a variety of country, with hills of moderate and considerable height, and gently rising hills covered with open forests and grassy pastures. Several settlements have been made in this tract, and the fertility of the soil is such, that it will probably become a populous district.

The back of the country of the Barwon River, of the existence of which government was unacquainted up to 1838, though it had for some time before been visited by woodcutters, who obtained excellent cedar-timber there.

The country contiguous to the Coast Range, consists of several fine and extensive valleys, separated from each other by narrow rocky ridges, which rise only a few hundred feet above the common level of the country. These ridges are covered with rich cypress-trees of great magnitude. The hills rise with a gentle ascendency, and are covered with open forests; they are equally adapted for cultivation and grazing. The highest hills lie on the north side of the river, where some rises from 700 to 800 feet above sea-level. There are also some parts of this district which are适切身資料。
Plains begins a range of mountains which runs about a hundred miles from south to north, between 31° and 29° 30' S. lat.: it is called Nundawar, or Hardwicke Range, and is a subject of much north of it; it attains a great elevation, some of the summits rising to 3500 and perhaps 4000 feet above the sea-level. The mountainous portion of this chain occupies only from 10 to 12 miles in width, but it is surrounded by hills and offsets, which are the results of the northward retreat of the ranges. A great number of watercourses originate in these ranges, and water the country surrounding it on all sides. Thus the tract of country between the river Gwydir on the east and Nundawar or Peel River on the west, according to its fertility in cattle and sheep, and occupies a considerable portion of land fit for cultivation, though it varies much in its soil. Some parts are barren, and their surface is covered by thick bushes and stunted trees, which prevents the springing up of grass; others are overgrown with forests of small timber, and are supposed to be the most arable; and yet others, which are made of a degree of gluten lighter and sweeter than those prepared from common flour. These plains are only provided with water, as the sandstone of the country and the quality of the soil make it difficult to collect water in springs, which are neither abundant nor of long duration. But after long-continued rains it appears that a considerable portion of the plains is entirely covered with water and contains temporary lakes, but when a drought has continued for some time large rivers dry up, and in their bed are only found pools, generally at considerable distances from one another. In such a state the banks are not at all visible, and the banks are not at all visible, and the water occasionally is not navigable, though in summer it is in danger. The post office at Nundawar, which was established on the 1st of January, 1817, is obliged to return by the immense swamps which he found spreading on both sides of the Lachlan. He travelled in this region for five weeks, through a country over which the waters of the Lachlan were so abundantly dispersed, that the group of swamps admitted the animals to pass, but not the party meet with a dry spot on which to encamp at the close of the day. But when Mitchell traversed it, his party was frequently in danger of perishing from thirst, the river being dried up, and the pools in its bed occurring only at considerable distances from one another. It is possible that along the banks of this river pasture-ground must exist, at least at certain seasons of the year, as a herd of wild cattle was found as far west as 146° E. long., and they must have wandered to this place from the settled parts of the colony.

In reviewing this rapid survey of the soil of New South Wales, we find that between 28° and 30° S. lat., the country which may be considered as available for cultivation or the rearing of cattle and sheep extends to a distance of about 200 miles from the coast line. When we still add the narrower tract which lies between 29° and 28° S. lat., this country covers a surface of more than 100,000 square miles. There are certainly large tracts which must be considered as useless wastes, as the highest part of the country is so covered with boulders as to be unfit for cultivation, and the rest of the country is too poor to be of service for cattle and sheep. If compared with most countries of Europe, it cannot be said that New South Wales is favourable by nature in the fertility of its soil, though the Scandinavian Peninsula and the northern and southern portions of Asia contain certain districts of a much more advantageous proportion. But Europe must be considered as the most fertile portion of the globe, with the exception of the southern and south-eastern portion of Asia. If we compare New South Wales with South America, it is only possible to point out the large country's contiguous tract of equal extent which is superior in fertility. That portion of New South Wales which lies south of 36° S. lat., and farther to the west occupies the whole surface of the country and the course of the river Mulumbidgee, is to all appearance much superior to the old colony in productive power; but as a very large portion of it has not yet been explored, it would be premature to form a decided opinion respecting its value as an agricultural country. It covers an area of more than 100,000 square miles.

Rivers.—The larger river which drains the country between the Pacific and the watershed have water all the year round. They generally flow in beds which are deep and narrow, and are deeply depressed below the common level of the country, and between banks which rise perpendicularly, or nearly
so, from 100 to 200 feet, and frequently higher, so that the streams are inaccessible, except at a few places. This peculiar construction of the channels in which the rivers run renders it impossible to use their water for irrigating the adjacent fields, with any advantages connected with expensive machinery, though certainly great advantages would result from such a practice in a country subject to such long droughts as New South Wales. These rivers are also of little avail as channels for the transport of the produce of the soil. The only means of proceeding on land and water are, according to distance from their mouth, above which their current is frequently broken by rapids and cataracts, which indeed are neither long nor high, but their frequency renders it impossible to navigate them even by small boats.

The Sturt, Sorell, and Shoalhaven rivers are the most considerable of this region, rises on the table-lands east of the Warragong Mountains, and runs about 90 miles northward, measured in a straight line, and then about 40 more miles north by west. Near its banks trees are cut down, and slightly depressed below the general level of the table-lands. In proceeding northward it continually sinks deeper, so that where it forms the boundary between the counties of St. Vincent and Argyll it runs in a cleft 1500 feet deep and between steep rocks furrowed by numerous ravines. Below its great bend the rocks enclosing its bed are less elevated and their acclivities more gentle, but still so close to the water as not to leave a bottom. It emerges from these hills about 20 miles from its mouth, and at this point coming from the south it tap the river from the north, at a yard or perhaps less, as it flows over a ledge of small, rounded, water-worn stones, which are hardly covered with water. The tide flows thus far, and below this rapid the river may be navigated by boats, but its mouth is so obstructed by shoals and sandbanks that it is useless to attempt to use the river for navigation.

The Hawkesbury falls into Broken Bay. It rises, under the name of Wollondilly, on the Connecting Table-lands, and receives nearly all the waters which are collected on them. It flows in a deep bed, which however is accessible. Still it begins to form the boundary between Argyll and Camden, where it sinks into a deep ravine, and is no longer accessible. In this ravine it traverses a country exceedingly wild and broken, belonging to the Blue Mountains, and separates Westmoreland from Camden under the name of Wollondilly and the county of Cook from that of Camden under the name of Warragamba. It issues from the ravine where it begins to form the boundary between Cook and Cumberland, but its current is still so rapid to be navigated. The last rapids occur near Windsor, from which it divides into two channels, one of which is only 40 miles from the sea in a straight line, but 100 at least following the windings of the river, whose waters are fresh for 30 miles below the town. Its estuary, Broken Bay, is the most beautiful and extensive of any in the country, and is navigable for vessels even for large vessels, the best of which is called Pittwater. The whole course of the river exceeds 250 miles. Sometimes the floods of this river rise to 90 feet above its usual level, and the inundations then lay waste the fertile tracts on its banks.

George's River falls into Botany Bay. It runs hardly 60 miles, but is navigable for boats from Liverpool down wards, a distance of about 12 miles in a direct line, but 24 miles following the windings of its course. The water is occasionally brackish at Liverpool in the long summer droughts.

Hunter River disemboages into Port Hunter. It has two great branches, one called Hunter and the other Goulburn. Hunter River originates on the southern de chers of the lagoon, where the chain which is connected with the Coast Range, and flows for about 80 miles south-west in a rather wide valley, which contains a bottom half a mile wide and upwards. Where the Hunter meets the Goulburn, it forms an acute angle, and where the town is, it is called the Maitland River. It is one of the branches of some of the branches of the Brisbane, south of 28° S. lat.; but only a small portion of its course near the mountains is known. It is supposed that it is the same river which, about 200 miles farther to the south-east, is called by Major Mitchell, where it was called by the native Karula. It ran to the west of south, had a considerable body of water, was about 5 feet deep, and was joined by another large river, the Gwyda, which receives the drainage of the countries lying between the Nundawar Range and having alluvial tracts along its banks. Several rivers, running from 50 to 100 miles and upwards, join the Goulburn and Hunter from the north, originating in Liverpool Range. The course of the Hunter is very rapid, which runs for 20 miles in a straight line. The navigation begins at Maitland, about 20 miles from Port Hunter by land, but nearly 40 miles by water, and a steam-boat is now regularly plying between that town and Sydney. This river often rises rapidly after heavy rains, and at such times runs over the whole of its course. The navigable rivers which drain the counties north of the Hunter are the Manning, Hastings, Clarence, and Brisbane, and have been noticed before.

Of the rivers which fall into the southern sea only the Goulburn, or Nangar, need to be mentioned. It rises on the western declivities of the Grampians, flows for more than a hundred miles westward, when by degrees it turns to the south-west, and then suddenly to the south, in which direction it runs about 80 miles. In approaching the sea it turns suddenly westward, and enters Southern Australia, but by another sudden turn to the south-east it returns to New South Wales, where it forms a small basin before it disemboages into the sea. The mouth of this river can never be made available as a harbour. It is bounded on which there are only from one to two feet of water, and on which the sea breaks with great violence; besides, the accumulation of sand is sometimes so great between the east and west shores of the entrance, as completely to obstruct the passage of vessels. The river, as it flows, immediately above its embouchure, has also a depth of not more than two or three feet water: above the basin the river is of considerable depth, and probably navigable to some extent.

The rivers disemboaging into the interior of New South Wales, as far as it is known, appear to belong to one river system, whose basin probably contains an area of not less than 500,000 square miles. It is called the river-basin of the Murray, not from the river which has the longest course, but from the river which carries the largest amount of water. The rivers composing this extensive system may, according to their origin and nature, be divided into three classes. The first class comprehends those which originate in the elevated Coast Range, and receive from it immense supplies of water, and on the other hand, however, they lose by evaporation and absorption in their long course through the arid plains of the interior; so that towards the end of their long course they dwindle down to the size of small rivers, and become fordable. The second class are those rivers which originate on the western declivity of the sandstone rocks of the Blue Mountains, from which they carry off a moderate quantity of water, which after a long-continued drought is so reduced, that it is soon evaporated and absorbed; the beds of the rivers then get dry, and water occurs only in pools or small lakes at great distances from one another. The third class of rivers are those which originate within the extensive mountain-region of the Australian Alps, and in the elevated tracts of country which from this region extends westward to the Grampians. As they are abundantly supplied with water from these high courses, and their course does not lie through desert and arid steppes, at least not to any great extent, they always preserve a considerable volume of water; and many of them will certainly be found fit for navigation in a great part of their course.

The Darling is supposed to receive all the waters which collect on the northern slope of the Liverpool Range and on the western declivity of the Coast Range, so that its upper branches drain the country extending from 32° to 38° S. lat. The most northern of these branches, as far as the mouth of the Gwyda River, is called by Major Mitchell, name of some of the branches of the Brisbane, south of 28° S. lat.; but only a small portion of its course near the mountains is known. It is supposed that it is the same river which, about 200 miles farther to the south-east, is called by Major Mitchell, where it was called by the native Karula. It ran to the west of south, had a considerable body of water, was about 5 feet deep, and was joined by another large river, the Gwyda, which receives the drainage of the countries lying between the Nundawar Range and
the Coast Range. Though the sources of the Gwydir are not known, a part of its course, along the northern side of the Nundawar Range, is known. Farther to the west the course of the Karaula has not been explored, but it is thought to be the same river which was seen by Capt. Sturt between 144° and 147° E. long., and was called by him Darling. He found the water of the river salt at the place where it is joined by the river Castlereagh, which rises in the Liverpool Range, near its western extremity. Nearly all the watercourses originating on the north-west extremity of this range join one another to the south-west of Nundawar Range, where the institute a considerable river, the Peel, or Namnou, whose upper course has been surveyed; but it is uncertain if this river joins the Karaula, or Darling, or if it is lost in an immense swamp. The courses of this river have never been traced. After joining by the Castlereagh, the Darling runs westward through an unknown region, but westward of 146° 20' its course is known. West of 146° it is joined from the south by the Bogan, a river originating in Harvey Range, whose northern extremity of this range joins one another to the west of 146°. The Bogan is joined by the Castlereagh, the Darling runs westward through an unknown region, but westward of 146° 20' its course is known. West of 146° it is joined from the south by the Bogan, its water is found salt by Sturt, and so also lower down; but Mitchell found that this was only the case at some places where there are numerous salt-springs on the banks of the river; the river places its water as quite sweet. At its confluence with the Bogan the Darling runs south-west, and continues in that direction for more than 300 miles, when it turns south, and after a course of 300 miles in that direction, falls into the Murray. In this course the river has been observed to change its course, and is not joined even by a rivulet. It has very little water in dry seasons, and is fordable at most places. Not far from its mouth a portion of its course, about 50 miles in length, has not been explored; but there cannot be any doubt of its identity of the river, as it is supported by the unvaried statement of the aborigines.

The waters descending from the western declivity of the Blue Mountains are collected into two rivers, the Macquarie and the Bogan. The Macquarie originate north of 34° S. lat. Two considerable mountain-streams, the Fish River and the Campbell, unite in the Plains of Bathurst, and form the Macquarie, whose course lies to the north-west; and after a run of about 280 miles it is lost in marshes, which cover a considerable tract of land. In the Plains of Bathurst its surface is more than 1000 feet above the sea-level. After it has passed the northern extremity of Hervey Range it is still 40 yards wide. North of 32° S. lat. it forms a cataract 5 feet high, and at places 650 feet above sea-level. This section of the river is to be a considerable river even in the vicinity of the marshes, where it is from 7 to 10 feet deep. That it preserves such a volume of water is mainly to be attributed to the circumstance that it is joined by two considerable rivers of the same declivity, the Fish and the Campbell. At its confluence with the Bogan in the Liverpool Range, the southern is called Cudgegong, and the northern Erkine River. They fall into the Macquarie before it arrives at Hervey Range. It is supposed that in times of great floods the Macquarie discharges its surplus water either into the Castlereagh by the Morrisett Ponds, or into the Bogan by Duck Creek, channels which at other seasons are entirely dry, or contain only water in a few pools. The Macquarie, or, as it is called by the aborigines, the aborigines, the Culburra, is a river the whole extent of which is not known. It is one of the largest and is still joined by two others, and is of considerable size. In March, 1838: even in the vicinity of the Blue Mountains, where the river is joined by Byrnes Creek (34° 30' S. lat. and 148° 20' E. long.), and farther down, there were only a few small ponds in the deepest part of the bed; but Oxley found in the same season, in 1817, such a volume of water in this river, that he was able to navigate it in a boat. Oxley thought that the Lachlan terminated, like the Macquarie, in extensive marshes; but Mitchell found these marshes quite dry, and ascertained, that when the river is swollen it discharges its waters into the Murray. The numerous rivers which derive their waters from the Australian Alps and the elevated country west of them form the Murray River. This river has two principal branches, the Murrumpurrrrrurrururrum and the Millagro. The Murrumpururrurrurrum, or Murrumbidgee, rises to the east of the Warragong Range, on the elevated table-land contiguous to that chain, and runs for about 100 miles on these table-lands northward, and at the distance of only a few miles from the coast it enters the sea. From the mouth of this river it falls for about 100 miles between high lands and mountains, and then runs westward, until it enters a more level and lower country near 147° 20' E. long. Before it reaches this point the river is joined by three or four tributaries, which drain the north-western portion of the Australian Alps. But below that point it is in its western course joined by no river of any importance until it arrives at the mouth of the Lachlan; but as the last-mentioned river is frequently dry, it can hardly be considered as bringing any supply to the Murray. The distance of the mouth of the Lachlan to this point, probably exceeds 350 miles. After having been joined by the Lachlan it continues to run to the west and south-west for about 100 miles more, when it is joined by the Millagro. The Murrumbidgee is a considerable river, and is not likely to be joined by any of the greater tributaries of this river. It continues, however, its course to nearly 149° W. long., and perhaps higher. Its whole course exceeds 560 miles. The Millagro, which is also called Murray River, receives all the rivers originating in the higher portion of the Australian Alps. They are very numerous, but imperfectly known, except where they join the Millagro. The river has an anchorage at its mouth, and to which the name of Macquarie also has been applied. It is also not known where these rivers form their junctions, as by far the greater part of their course is not known. Mitchell has been here in 1817. The lower course only of the Millagro, for about 50 miles upwards from its confluence with the Murrumbidgee, has been seen by Mitchell. In these parts it is a wide and deep river, flowing through a bottom which is from 6 to 10 miles wide, and running to the north, and is bounded on both sides by high banks. But its vicinity is subject to considerable variation. It is frequently dry, and is often divided into rivulets, and has some ponds. It is also stated to be a place affording safe anchorage.

Climate.—It is evident that in a country which extends...
over twelve degrees of latitude, and borders on boundless steps; the climate must vary considerably. The information we possess of it is very scanty, as been in these parts which have been settled for considerable time. Continuous meteorological observations have not been made, so far as we know. But the few observations that we possess are sufficient to convey a more exact idea of the climate than is usually presented from Port Jackson alone; than the observations of travellers. These travellers however appear not to have been mistaken when they compare the climate of Sydney with that of the southern parts of Italy, as the following table shows, in which the climates of Naples, Sydney, and Paramatta are placed side by side:

<table>
<thead>
<tr>
<th>Month</th>
<th>Naples</th>
<th>Sydney, Paramatta</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>43°-5'</td>
<td>54°-1'</td>
</tr>
<tr>
<td>February</td>
<td>51°-1'</td>
<td>56°-5'</td>
</tr>
<tr>
<td>March</td>
<td>58°-3'</td>
<td>62°</td>
</tr>
<tr>
<td>April</td>
<td>65°-6'</td>
<td>68°</td>
</tr>
<tr>
<td>May</td>
<td>73°-6'</td>
<td>75°</td>
</tr>
<tr>
<td>June</td>
<td>79°-1'</td>
<td>78°</td>
</tr>
<tr>
<td>July</td>
<td>85°-9'</td>
<td>72°</td>
</tr>
<tr>
<td>August</td>
<td>67°-9'</td>
<td>68°-5'</td>
</tr>
<tr>
<td>September</td>
<td>73°-5'</td>
<td>60°</td>
</tr>
<tr>
<td>October</td>
<td>59°-2'</td>
<td>59°</td>
</tr>
<tr>
<td>November</td>
<td>59°-2'</td>
<td>58°-5'</td>
</tr>
<tr>
<td>December</td>
<td>56°-9'</td>
<td>53°-5'</td>
</tr>
</tbody>
</table>

**Mean Annual Temperature.**

<table>
<thead>
<tr>
<th>Month</th>
<th>Sydney, Paramatta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>54°-8</td>
</tr>
<tr>
<td>Spring</td>
<td>56°-5</td>
</tr>
<tr>
<td>Summer</td>
<td>64°-7</td>
</tr>
<tr>
<td>Autumn</td>
<td>66°-8</td>
</tr>
</tbody>
</table>

From this table it appears that the annual temperature of Sydney is about one degree higher than that of Naples, whilst that of Paramatta is higher by one degree and six-tenths. When we consider more closely the details, we find that the heat is more equally divided through the year in the country round Port Jackson than at Naples, as appears from the following table:

<table>
<thead>
<tr>
<th>Month</th>
<th>Sydney, Paramatta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>51°-3</td>
</tr>
<tr>
<td>Spring</td>
<td>56°-3</td>
</tr>
<tr>
<td>Summer</td>
<td>63°-7</td>
</tr>
<tr>
<td>Autumn</td>
<td>66°-5</td>
</tr>
</tbody>
</table>

The cold at Naples in winter is therefore greater than at Sydney by nearly five degrees, but exceeds that of Paramatta only by two degrees. But, on the other hand, the heat in summer at Naples is more than five degrees greater than at Sydney, and more than seven that at Paramatta. This agrees perfectly with the statement of travellers that frost is unknown in the vicinity of Sydney, whilst at Naples it is experienced nearly every winter, and sometimes ice is formed of the thickness of a crown. We find however that at Paramatta the thermometer descends sometimes as low as 27°, and even 20°, whilst in summer it rises to above 100°, and even to 106°. At the same time it is observed that the changes of the weather are frequent, and sometimes sudden at Port Jackson than at Naples, and that the daily and monthly range of the thermometer is much greater, especially in the latter part of the spring and summer, at which season the monthly range amounts to more than fifty degrees. It is even stated that in a very short time the thermometer rises or falls 25 and even 30 degrees. This great and sudden change is produced by the wind turning from north-west to south-east, or rice rised. The north-western winds passing over the heated steps of the southern coast of the Blue Mountains acquire such a degree of heat that they are nearly scorching, and when they immediately set in after a south-east wind, which has brought to Sydney, do not only cool the eastern parts, but even the southern pole, the change is sudden and great. It is stated that in such a case the thermometer has been observed to rise almost instantly from 80° to 110° in the shade.

The annual quantity of rain which falls at Port Jackson has been determined. From the incomplete observations which have been published, it would seem that it amounts to from 36 to 40 inches. The rains are not so between the tropics, limited to certain seasons, but fall all the year round; they are however most frequent in winter (June to August). These rains do not resemble the rains of England, as they fall much larger drops, and are consequently heavier. Thus it happens that though the annual quantity of rain is much larger at Sydney than at London, the number of rainy days is less, by a hundred. Sometimes not a drop of rain falls during five months, but that cannot surprise those who know that this happens also at Naples. The most characteristic peculiarities of the climate of New South Wales are the long droughts which prevail for a portion of the years not a cloud passes over the sky, and the surface of the earth becomes so parched that the minor vegetation ceases to exist. It was supposed that these droughts were periodical, occurring every ten or twelve years. But the long drought which desolated the country in 1822 and 1829 was followed by another in 1833 and 1836, and a still more recent one in 1839. These droughts are generally succeeded by excessively long and heavy rains, which, as is supposed, lay the plains in the interior under water, and change them into temporary lakes. These lakes sometimes continue uninterrupted for a succession of days, without being attacked by thunder or a drop of rain falling.

This account of the climate refers only to the country surrounding Port Jackson. On the Connecting Table-lands and in the Plains of Bathurst, which are more than 2000 feet above the sea-level, the winters are much more severe. Frost is there experienced every night for six weeks or two months, and snow often lies on the summits of the adjacent mountains. It is even found in the valleys and depressions which are not much exposed to the effects of the sun. As in summer, the heat is several degrees less on these elevated counties than at Port Jackson, the grass is not so quickly burnt up, and the rocks of the cliffs find here nearly all the year round sufficient for their sustenance.

We know very little of the climate of the unsettled portions of the colony. Major Mitchell, when traversing the interior on his travels, by the description he made in his journal, by which it appears that while passing through the northern districts, or those which lie at the back of the Coast Range, he experienced in summer, during more than two months, a degree of heat which kept the thermometer on the average at 80° and 90°, and actually forming a circle of desert heat, and it is also stated, but only happened when the sky was for some time overcast or some rain fell. This degree of heat was the effect of the continuance of the north-westery winds, which probably pass over an immense steppe, and are not broken by any ridges of mountains. The climate of this part of New South Wales seems to resemble that of Senegambia. [Vol. xxi. p. 236.] In winter however the temperature appears to be much lower; for in this season the thermometer on the banks of the Darling was found to range commonly between 90° and 100°, and occasionally 106°, whilst in summer, between 80° and 90°, and occasionally 106° and 107°. In Australia Felix, on the banks of the Millewa River, the thermometer varied in winter between 45° and 50°, but in the higher grounds it rose to 70° and more, and descended to 48°. In New South Wales, the thermometer in spring and autumn, is generally between 50° and 60°, and sometimes 60° and 70°, and the nights are often as cold as in England.
Spit, which may be considered as the most southern point of the coral reefs which extend along the eastern coast of Australia from 26° S. lat. to Torres Strait, is an important point for navigators, as at that cape a change takes place in the direction of the winds and currents. No strong current appears to prevail north of that point, but south of it a strong current, running about two miles and a half in an hour, is met with at a distance of 15 or 20 miles from the shore. In summer, between October and February, it carries water to the north and south. In the space between it and the coast there is a weak current, which sets to the north. North of Break-sea Spit the prevailing wind in winter is the north-east trade-wind, which occasionally varies to the south-west coast, and blows with great strength. To the south of Break-sea Spit the winds are more variable, because this part of the coast is without the reach of the trade-winds, and therefore they are much influenced by the direction of the coast, which runs near north and south. Vessels sailing northward in summer accordingly keep close to the shore, where there are no hidden dangers, and where they have in their favour the weak northern current, and may take advantage of the land-winds which usually blow along the coast and may sail through Torres Strait. [Torrres Straits, vol. xxv. p. 52.] But in the opposite season, from March to September, they generally take that route, as at that period of the year the current is in their favour, and the southerly winds blow with great strength. Ships prefer this route, as the navigation through Bass's Strait and round Van Diemen's Land is then very difficult and tedious. For when the sun is in the northern hemisphere the winds, which along the southern coast of Australia generally blow in a south-westerly direction, have great strength in Bass's Strait as if they went through a funnel, and even round the southern part of Tasmania they are so powerful that vessels returning from New South Wales to Europe find it difficult to contend with them, and on this account the return passage through this strait is on an average three times as long as the outward passage. Vessels therefore bound from Sydney to Europe, the Cape, or Hindustan, prefer in this instance to pass through Bass's Strait or round Papua. [Pacific, vol. xvii. p. 118.]

Agriculture and Agricultural Productions.—When the British settled in New South Wales they introduced all the kinds of grain and plants cultivated in England, and in the first few years they added wheat, flax, and tobacco. When they penetrated somewhat farther into the country, where the soil is better than in the immediate vicinity of Port Jackson, the crops, though not very abundant, repaid the labour bestowed on the land, and it seemed to the colonists that the country would turn out a valuable agricultural colony, like Canada. But no sooner had it been ascertained that the soil of the greater portion of the country was much better adapted for pasture, especially for sheep, than the attention of the colonists was almost exclusively directed to that object. This had an immediate effect on landed property: the grants of land which were made in the first 15 or 20 years generally did not exceed 200 acres; but all those which were made at a later period comprehended tracts extending over from 5000 to 10,000 acres. Landed property of small extent is only found in the first-settled counties, especially in Cumberland, and in Camden, Northumberland, and Durham. In the other counties small proprietors are hardly met with. The climate has greatly affected the extension of cultivation; the large proprietors find it most advantageous to convert their large estates into sheep-walks, which, on account of the peculiar nature of the country, can be done without expense; and as they expect to obtain ample returns by the sale of their flock, they do not encourage cultivation, at least not farther than is required for the consumption of their scantily peopled estates. The produce of these cultivated spots is only sufficient for home consumption in good seasons; and in times of drought, the shepherds and other persons attached to the management of the estates must be supplied with grain or bread from other parts of the country and from Sydney. It would even appear that the growth of wheat is on the decrease: we must at least infer it from the data contained in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Wheat</th>
<th>Barley, Oats, and Rye</th>
<th>Flour and Bread</th>
<th>Pasture</th>
<th>Rice</th>
<th>Potatoes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1828</td>
<td>85,710</td>
<td>6,689</td>
<td>320,640</td>
<td>641,578</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1829</td>
<td>107,925</td>
<td>2,575</td>
<td>42,076</td>
<td>183,703</td>
<td>548</td>
<td></td>
</tr>
<tr>
<td>1830</td>
<td>70,904</td>
<td>183</td>
<td>2,226</td>
<td>29,088</td>
<td>199</td>
<td></td>
</tr>
<tr>
<td>1831</td>
<td>110,714</td>
<td>738</td>
<td>328,366</td>
<td>41,142</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>1832</td>
<td>44,908</td>
<td>977</td>
<td>30,072</td>
<td>88,302</td>
<td></td>
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</tr>
<tr>
<td>1833</td>
<td>19,307</td>
<td>2,061</td>
<td>14,272</td>
<td>30,200</td>
<td>222</td>
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</tr>
<tr>
<td>1834</td>
<td>15,560</td>
<td>6,816</td>
<td>346,896</td>
<td>472,600</td>
<td>496</td>
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<tr>
<td>1835</td>
<td>122,900</td>
<td>12,031</td>
<td>1,177,018</td>
<td>1,332,592</td>
<td>502</td>
<td></td>
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<tr>
<td>1836</td>
<td>203,050</td>
<td>27,577</td>
<td>1,453,550</td>
<td>474,359</td>
<td>1,088,706</td>
<td>563</td>
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<tr>
<td>1837</td>
<td>114,410</td>
<td>6,222</td>
<td>1,086,597</td>
<td>169,746</td>
<td>525</td>
<td></td>
</tr>
<tr>
<td>1838</td>
<td>73,168</td>
<td>55,075</td>
<td>875,878</td>
<td>702,246</td>
<td>1,160</td>
<td></td>
</tr>
</tbody>
</table>

Though the number of acres under cultivation is small, the produce is considerable, in spite of the careless manner in which it is cultivated. The principal crops are maize or potatoes, or one crop of wheat and another of maize and potatoes, may be taken annually from the same field, if the soil is good and the season favourable. Wheat produces on an average 15 bushels—in better lands even 30 and 40 bushels—per acre; and maize varies from 40 to 90 bushels per acre according to the quality of the soil. Oats are not much grown, except on the high grounds of the Connecting Table-lands and the plains of the Hunter River, where they are used in lieu of maize, which does not succeed so well in these colder tracts. The growth of barley and potatoes is on the increase. Tobacco is only cultivated to some extent on the banks of Hunter River.

The gardens have been at some pains to introduce many kinds of fruit-trees and vegetables, and they have in most cases done it with tolerable success. There are oranges, lemons, citrons, nectarines, apricots, peaches, plums, cherries, figs, quinces, pears, apples, peaches, pomegranates, grapes, raspberries, strawberries, bananas, guavas, pine-apples, gooseberries, and currants; and almonds, walnuts, chestnuts, and filberts. Bananas and guavas come only to perfection in low sheltered places near the sea, and pine-apples require the aid of a frame for filling out and ripening. Gooseberries, on the contrary, succeed only in the colder and more elevated counties, as near Bathurst. Grapes have lately been greatly improved, both as to size and flavour; and as they begin to bear after a great interval, it is hoped that the cultivated vine will constitute an article of export from New South Wales, as the soil seems exceedingly well calculated for the growth of vines.

In the kitchen-gardens are raised melons, water-melons, pumpkins, squash, cucumbers, cabbages, turnips, and other vegetables.

Pastures and Domestic Animals.—New South Wales has become a pastoral country not on account of the richness of its pastures, but because that portion of the country which is fit for that purpose is so extensive. It is asserted, and we think with reason, that the richest swaths there are full two-thirds inferior in point of closeness to the old pastures in England. The grass grows only detached tufts, and between them is so much waste space.
Forests.—The peculiarities by which the botany of New South Wales is distinguished may be seen under AUSTRALIA. In some parts of the colony the trees are useful for domestic purposes, and some of them are of much value. The most valuable is the cedar (Melia azedarach), which is found especially at Illawarra, and on the banks of the Hunter, Hastings, and Clarence Rivers. Several of the trees found in Bass's Strait, as the Eucalyptus, are very valuable, especially the blue gum (Euc. obliqua), the iron bark tree (Euc. resinosa), and the stringy bark tree (Euc. robusta), and from some of these an excellent bark is obtained for tanning, of which small quantities are sent to England. Timber is further obtained from a kind of pine belonging to the genus Callitris. Most of the eucalypt yield a kind of gum, and therefore they have obtained the name of gum-trees. No use has yet been made of this gum, but many think that it may at some future period come to be of value.

A summary account of the zoology of South Wales is found under AUSTRALIA (Vol. iii., p. 126). Several new species of mammals, birds, and fishes have been discovered since that article was written, as a Jerboa dipus, a Choropus ecuadus, &c.; but the best known of all these animals are the kangaroo dogs. A few species of these animals at small numbers, they are not likely to affect the domestic economy of the inhabitants, and are for that reason here omitted. In Bass's Strait and along the eastern coast whales and other cetaceous mammals, and also seals, are very abundant, and the number of vessels belonging to the colony are employed in the fishery.

Minerals.—New South Wales is not rich in metals. There are in some places slight indications of the existence of gold and silver. Iron ore is known to exist in several places, especially on the Black Mountain, in the vicinity of the coal-beds, in Hunter of the Hunter, and in several extensive coal-measures, two of which are worked. Those found near the mouth of the Hunter River, near Newcastle, are extensively worked, and their produce is shipped to Sydney. The coal-beds near Western Port are very large, and those near Port Phillip, on which a very little is yet worked.

An account of their characteristic features is given under AUSTRALIA (Vol. iii., p. 122). It is however stated that their colour is not universally black, but that in the interior, and also at some places on the coast, there are tribes which have a light copper colour, which seems to indicate that they inhabit the south-western or the south-eastern races. Their hair is also not woolly, but only frizzled, and never grows long.

Though dispersed over such a large extent of country, it does not appear that the different dialects spoken by them are so widely different as to render the aid of an interpreter necessary for the purpose of communicating with one another. Mitchell, having collected vocabularies from different parts of Australia, finds that in the languages of those tribes which inhabit the south-western and the south-eastern races of that continent several words are found, mostly applying to different parts of the human body, which are either the same or resemble one another greatly, whilst no such resemblance occurs between these words and another tribe, the language spoken by the natives on the northern coast of Australia.
The aborigines certainly live in a very low state of civilization. This is proved by their going almost naked. The men wear girdles, usually made of the wool of the opossum; and a sort of tail of the same material is appended to this girdle, both before and behind, and seems to be the only part of their costume suggested by any idea of decency. Rouse the men in possession of a neatly-wrought bandage or fillet, which they whiten with pipe-clay, as a soldier cleans his belts. They also wear one of a red colour under it. The women generally wrap themselves up in a species of cloth made of the blackbuck and blesbuck. As some of these tribes live in parts which are subject to a considerable degree of cold in winter, it is rather a matter of surprise that they have not adopted a warmer clothing. But they generally pass the nights bare-headed.

As most of the tribes are continually moving about in search of food, they have no fixed abodes. In the night-time they protect their fires by the bark or the boughs of a tree placed to the windward. A few tribes however living along the coast of the Pacific have fixed habitations. In 1839, when the newly discovered Clarence River was explored, a number of huts, forming a temporary village, was found at the head of a deep estuary which appeared to give a considerable command of fishing-ground. This small industry is of considerable value in the manufacture of their utensils and arms. Mitchell found that the nabs used by the aborigines on the large rivers of the interior approached nearer to those made in Europe than any other thing made by them. The fishing tribe on the Clarence were possessed of nets, fish-baskets, skin vessels, and cooking utensils, which were made with peculiar care and neatness. The same observation is made respecting their arms, of which that peculiar kind of missile called domoring is attached to the headdress of all travellers, as it is used in a very unusual way. A description of it and its uses is found in Mitchell's 'Three Expeditions,' &c., vol. ii., p. 348.

The opossums constitute the ordinary food of the nation, and are the basis of all their other manufactures. They are the work of the forest, and seem to be to a great extent adapted to the climate. The animals are always very fat, and easily procured. As the skin is soft and shrivelled, and of such a length and breadth as to be very useful, the men have made of it many articles.

The natives are accused of cannibalism. Mitchell, who certainly knows them well, denies the fact. But Bennet heard of a weak and sickly child having been destroyed, and even eaten. This appears however to have been an exceptional case. In another instance, the parent was so very hungry, and the child was of no use and much trouble. Infanticide however is not rare, and the alleged reason is that the children are too much trouble to carry along, and that the parent almost starved to death destroy the infants produced by the intercourse with Europeans, unless the father resides constantly with the female, or may be near her at the time of the birth to prevent it. The most remarkable of their customs is the practice of striking out one of the front teeth of the males at the age of puberty, and that of the females of cutting off the last joint of the little finger.

The aborigines have frequently attacked remote stations, and killed the settlers. This is partly attributed to the harsh and unjust treatment they have experienced from the hands of convict-settlers, or convict-servants, and partly to the desire of appropriating to themselves some portion of their property which they think useful. Besides, it is observed that when a white man has been killed by them, it is the custom to return to punish with the whites, until one of their tribes has been killed by the whites. This appears to originate in the principle that bloodshed can only be atoned for by the shedding of blood. From time to time they have in different parts of the colony carried off white persons; but as they do not take their outrages very seriously, it has been obliged to send the police force against them, and to attack them regularly, until they are impressed with the superiority of the whites; when that has been done, they no longer molest the settlers.

The aborigines are of a more advanced state of civilization than most of the native tribes of America. Mitchell speaks highly of their mental powers and judgment in everything they are acquainted with. He thinks them in man-
westerly of the Coast Range lying at the back of Moreton Bay; and this part of the interior is now known by the name of New England. In Australia Felix the stations extend to the vicinity of the Nangarri River, not far from the boundary-line of South Australia, and along the coast beyond Port Phillip.

The number of licensed stations amounted, in 1839, to 699. The number of stock for which assessment was paid was 7068 horses, 371,699 horned cattle, and 1,334,313 sheep. The real amount of livestock however, probably considerably exceeds the amount returned.

But it is thought that these stations have now attained the extreme limits to which they can extend. Their distance from Sydney is now so great, that the feeding of sheep and beef destined for profitable export must at present be beyond wool being the expense of transport to such a great distance. Government has therefore lately resolved to open roads to some other harbours which are much nearer, and on which there have hitherto been no settlements, or at least easily accessible of arable lands such as the countries west of the Coast Range to the ports of Moreton Bay, Shoal Bay, or the mouth of Clarence River, and to Port Macquarie. South of the boundary of location, roads are to be made to Twofold Bay and Portland Bay. As the transport of goods will be much extended to these places, and the expenses consequently diminished, it is hoped that the stations will continue to extend farther to the west and north.

Some two years ago a road was opened from the connecting Table-lands and the banks of the Murrambridge to Port Phillip, which runs through a country which only eight years ago (1830) was traversed for the first time by Europeans, and along which there are now a considerable number of stations, and also inns at convenient distances.

There is no want of roads within the boundary of location. Three lines of roads, which have been made at considerable expense, traverse these countries. One leads from Sydney on the new main line, to a branch of the Nepean, another to Hunter River, and a third to the fine pastoral countries on the connecting Table-lands. These roads are not inferior to any on the continent of Europe, and nearly equal to those of England: but as they all terminate at Sydney, the sense of transporting the produce of the land from the southern districts is considerable, and operates as a check on the industry of the inhabitants. But a new line of roads is to be opened from the connecting Table-lands to Jervis Bay, nearly 100 miles south of Sydney, by which the distance from Port Jackson and the market will be shortened by more than one-half for these districts.

Inhabitants.—The white population of New South Wales consists of two classes, freemen and bondmen. The former are of English extraction and were transported from Great Britain to that country as a punishment for their crimes. As New South Wales in the beginning was merely a penal settlement, its population was far more than twenty years after the foundation of the colony at least as large as the number of convicts transported on the establishment of the colony. The number of convicts has been less than the amount of population. Even after the colony had been opened to free immigration, the circumstance that its inhabitants were only convicts deterred many persons from going to settle there; and up to 1830 the number of free immigrants was very small in comparison with those who went to Canada and other colonies. The census of 1831 gave 46,276 inhabitants, and that of 1841 amounted to 130,856; so that in the last ten years the population has nearly doubled itself. It would soon come to one in five if the character of the colony having gradually changed from a penal settlement to an agricultural settlement, which offers great advantages to an industrious man, and in which he can now enjoy the fruits of his industry without fear of being stripped; and up to 1830 the number of free immigrants was very small in comparison with those who went to Canada and other colonies.

But New South Wales still continues to be a penal settlement. The number of convicts annually sent to that colony is still considerable, and exceeded, up to 1830, that of the free immigrants, as is evident from the annexed table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Male Convicts</th>
<th>Female Convicts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1829</td>
<td>3,171</td>
<td>493</td>
<td>3,664</td>
</tr>
<tr>
<td>1830</td>
<td>2,781</td>
<td>444</td>
<td>3,225</td>
</tr>
<tr>
<td>1831</td>
<td>2,259</td>
<td>504</td>
<td>2,763</td>
</tr>
<tr>
<td>1832</td>
<td>2,748</td>
<td>611</td>
<td>3,359</td>
</tr>
<tr>
<td>1833</td>
<td>3,513</td>
<td>638</td>
<td>4,151</td>
</tr>
<tr>
<td>1834</td>
<td>2,504</td>
<td>457</td>
<td>3,161</td>
</tr>
<tr>
<td>1835</td>
<td>3,423</td>
<td>179</td>
<td>3,602</td>
</tr>
<tr>
<td>1836</td>
<td>2,155</td>
<td>668</td>
<td>2,823</td>
</tr>
<tr>
<td>1837</td>
<td>2,282</td>
<td>769</td>
<td>3,051</td>
</tr>
<tr>
<td>1838</td>
<td>2,740</td>
<td>333</td>
<td>3,073</td>
</tr>
</tbody>
</table>

Total 28,246 4630 33,876 9054 7337 6794 23,183

The convicts are divided into three classes. The worst characters remain under the immediate surveillance of the inhabitants, of whom, and the employment of, government, which occupies them erecting public buildings, making roads, building bridges, &c. A considerable number is assigned to private persons, who either send them to their estates to serve as agricultural labourers, shepherds, &c., or employ them as criminal servants. The freed convict in the state of assignment has escaped punishment for four years he receives a ticket-of-leave, if he has been transported for seven years; but if he has been transported for fourteen, he must have undergone punishment for six years, and to be the condition of life, not for eight years, in order to obtain a ticket-of-leave. Those who have tickets-of-leave constitute the third class of convicts, and they are free to a certain degree, as they may employ their time as they think it most advantageous to themselves; but they are divided into two classes, one inhabiting the districts which have been assigned for their residence. Those who have passed in the colony the whole time awarded by the sentence of the criminal court, may return to England or any other country, or remain in the colony, which the number of the different classes is determined with great care by the government.

That the annual introduction of such a number of convicts must lower, or rather keep down, the moral condition of the inhabitants, is evident, and the experiment of discharging them from the colony as a penal settlement has repeatedly been suggested. This change has been insisted on still more in a political view. In present circumstances it is not advisable to grant to the colony a representation. The two parties, the free settlers, the free convicts, the free immigrants, and the free agricultural labourers, have the same interests, and therefore only desire the same objects. The great number of convicts retards the progress of the colony. They are considered by free inhabitants nearly in the same light as the negro slave population in the southern parts of the United States. The free convicts evince a great aversion to undertaking such kinds of labours and services as are commonly performed by convicts, and thus the most necessary labour in the cultivation of the ground is done in the most negligent way, a very small number of the convicts having been brought up as agricultural labourers. The discontinuance of sending convicts to the colony would probably also lead by degrees to the civilization of the aborigines. They show, as we have observed, no aversion to taking care of flocks, and there is no part of the country where the assistance of shepherds with a good deal of care and attention. If the proprietors of the sheep-stations, which are so numerous, could not be assisted by the convicts, they would be obliged to engage young native blacks for that purpose, and if they would pay five pounds a year, a very considerable amount, which will enable them to take care of their wandering life and to fix themselves in the midst of the white inhabitants. This course of events must soon lead to other more important steps, and the conversion to Christianity could easily be effected.

Population.—The last census was taken on the 2nd of March, 1841, and its results are laid down in the following tables. The districts to the proper names of which an asterisk (*) is prefixed, are Commissioner Districts beyond the boundaries of location.

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1829</td>
<td>3,171</td>
<td>493</td>
<td>3,664</td>
</tr>
<tr>
<td>1830</td>
<td>2,781</td>
<td>444</td>
<td>3,225</td>
</tr>
<tr>
<td>1831</td>
<td>2,259</td>
<td>504</td>
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</tr>
<tr>
<td>1832</td>
<td>2,748</td>
<td>611</td>
<td>3,359</td>
</tr>
<tr>
<td>1833</td>
<td>3,513</td>
<td>638</td>
<td>4,151</td>
</tr>
<tr>
<td>1834</td>
<td>2,504</td>
<td>457</td>
<td>3,161</td>
</tr>
<tr>
<td>1835</td>
<td>3,423</td>
<td>179</td>
<td>3,602</td>
</tr>
<tr>
<td>1836</td>
<td>2,155</td>
<td>668</td>
<td>2,823</td>
</tr>
<tr>
<td>1837</td>
<td>2,282</td>
<td>769</td>
<td>3,051</td>
</tr>
<tr>
<td>1838</td>
<td>2,740</td>
<td>333</td>
<td>3,073</td>
</tr>
</tbody>
</table>

Total 28,246 4630 33,876 9054 7337 6794 23,183
I. Table representing the Population of the Old Colony of New South Wales in 1841.

<table>
<thead>
<tr>
<th>Counties or Districts</th>
<th>Males</th>
<th>Females</th>
<th>General Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argyle</td>
<td>2434</td>
<td>963</td>
<td>3397</td>
</tr>
<tr>
<td>Bathurst</td>
<td>1795</td>
<td>672</td>
<td>2467</td>
</tr>
<tr>
<td>Bligh</td>
<td>473</td>
<td>73</td>
<td>546</td>
</tr>
<tr>
<td>Brisbane</td>
<td>1418</td>
<td>518</td>
<td>1936</td>
</tr>
<tr>
<td>Camde</td>
<td>4114</td>
<td>2172</td>
<td>6286</td>
</tr>
<tr>
<td>Cook</td>
<td>1854</td>
<td>1038</td>
<td>2892</td>
</tr>
<tr>
<td>Cumberland</td>
<td>33,763</td>
<td>24,345</td>
<td>58,108</td>
</tr>
<tr>
<td>Durham</td>
<td>4257</td>
<td>1851</td>
<td>6108</td>
</tr>
<tr>
<td>Georgian</td>
<td>1656</td>
<td>1825</td>
<td>3481</td>
</tr>
<tr>
<td>Gloucester</td>
<td>1051</td>
<td>973</td>
<td>2024</td>
</tr>
<tr>
<td>Hunter</td>
<td>655</td>
<td>344</td>
<td>999</td>
</tr>
<tr>
<td>King</td>
<td>343</td>
<td>165</td>
<td>508</td>
</tr>
<tr>
<td>Macquarie</td>
<td>1915</td>
<td>940</td>
<td>2855</td>
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<tr>
<td>Macalo</td>
<td>2382</td>
<td>540</td>
<td>2922</td>
</tr>
<tr>
<td>Northumberland</td>
<td>6557</td>
<td>3408</td>
<td>9975</td>
</tr>
<tr>
<td>Phillip</td>
<td>363</td>
<td>90</td>
<td>453</td>
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<tr>
<td>Roxburgh</td>
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<td>446</td>
<td>1520</td>
</tr>
<tr>
<td>St. Vincent</td>
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<td>454</td>
<td>1840</td>
</tr>
<tr>
<td>Wellington</td>
<td>390</td>
<td>120</td>
<td>510</td>
</tr>
<tr>
<td>Westmoreland</td>
<td>435</td>
<td>184</td>
<td>619</td>
</tr>
<tr>
<td>*Wellington</td>
<td>837</td>
<td>98</td>
<td>935</td>
</tr>
<tr>
<td>*Bligh</td>
<td>577</td>
<td>96</td>
<td>673</td>
</tr>
<tr>
<td>*Lachlan</td>
<td>965</td>
<td>251</td>
<td>1216</td>
</tr>
<tr>
<td>*Waranmore</td>
<td>1509</td>
<td>374</td>
<td>1883</td>
</tr>
<tr>
<td>*Murriagbee</td>
<td>1258</td>
<td>281</td>
<td>1539</td>
</tr>
<tr>
<td>*Peel's River</td>
<td>1424</td>
<td>167</td>
<td>1591</td>
</tr>
<tr>
<td>*New England</td>
<td>1003</td>
<td>112</td>
<td>1115</td>
</tr>
<tr>
<td>*Clarence River</td>
<td>343</td>
<td>73</td>
<td>416</td>
</tr>
<tr>
<td>*Macleay River</td>
<td>443</td>
<td>141</td>
<td>584</td>
</tr>
<tr>
<td>*Morton Bay</td>
<td>176</td>
<td>24</td>
<td>200</td>
</tr>
<tr>
<td>*Norfolk Island</td>
<td>2082</td>
<td>105</td>
<td>2187</td>
</tr>
</tbody>
</table>

II. Table representing the Population of Port Phillip in 1841.

<table>
<thead>
<tr>
<th>Counties or Districts</th>
<th>Males</th>
<th>Females</th>
<th>General Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourke</td>
<td>4882</td>
<td>2938</td>
<td>7820</td>
</tr>
<tr>
<td>Grant</td>
<td>598</td>
<td>192</td>
<td>790</td>
</tr>
<tr>
<td>Normanby</td>
<td>502</td>
<td>95</td>
<td>597</td>
</tr>
<tr>
<td>*Western Port</td>
<td>1100</td>
<td>181</td>
<td>1281</td>
</tr>
<tr>
<td>Portland Bay</td>
<td>1102</td>
<td>128</td>
<td>1230</td>
</tr>
</tbody>
</table>

| Total                 | 8274  | 4946    | 13220        |

Both portions of the colony, inclusive of Norfolk Island, contain, according to this census, 128,720 inhabitants: but it was considered that at the time of the census 20,000 persons were absent from the country in vessels belonging to the colony, most of them engaged in the whale and seal fishery. Thus the whole population of the colony amounted to 148,720 individuals.

The wealth of the colony is very unequally distributed over the surface of the colony. Nearly one-half of it is settled in the county of Cumberland, or rather in two-thirds of that county, as the most northern districts are a barren waste, and contain only a small number of cultivable acres along the banks of the Hawkesbury River. Northumberland stands next to Cumberland in population, containing nearly 10,000 inhabitants, who are almost exclusively settled on the fertile tract along the Hunter River and the alluvial valleys of its tributaries. The towns contain more that half the population, but the care also more than half the land which is under cultivation in the colony, for in 1837 the land cultivated for grain in the colony consisted of 8,424 acres, and of this number 26,726 acres were within Cumberland and 22,952 within Northumberland. This is not to be attributed exclusively to the superior fertility of these counties, though indeed the soil of most of the surrounding counties is inferior quality, but more especially to the state of landed property. With a few exceptions, all the small proprietors are found and land in these two counties, and in those of Camden and Durham. The number of landed proprietors, merchants, bankers, and professional persons amounted, in 1841, in the whole colony, to 4477, inclusive of the towns. Of this number 1896 resided in Cumberland, 423 in Northumberland, 430 in Camden, and 225 in Durham. Thus we find that nearly two-thirds of the above-named classes of persons were found in these four counties, and if those who reside in the towns are subtracted, it is very probable that one-half of the landed proprietors are found in them. From this the more the less the risk of any centralization in the other counties and districts the population is composed, almost entirely of shepherds and other persons employed in the care of sheep, a small number of people employed in agriculture, and a few mechanics and retail dealers. The increase in the population of the city is due to immigration. The disparity of the sexes is so great, that were the country left to its own resources, many years would certainly pass until such an equality would be established between them. The females stand to the males at present as one to two. This misproportion is chiefly produced by the number of male convicts and male emancipists, which exceeds about seven times that of the females of the same class. Among the landed property the difference in the number of the sexes does not amount to much more than one-sixth part of the whole. The immigration however in what may be called the Old Colony, that is, that portion which lies between 30° and 32° S. lat., will, we apprehend, be being still checked by the value of property. Few tracts of land, except such as are quite barren and hardly worth possessing, and a considerable number of town allotments, are at the disposal of government. The large landed proprietors expect the return of their outlay from the purchase of their flocks of sheep. It was their object to sacrifice a part of their present income to the prospect of an increase at a distant period, by converting a portion of the pasture into cultivated fields. They are still less inclined to sell such tracts as are fit for cultivation to the immigrants of the latter generation, and to the expectation of acquiring landed property and are disinclined to take lands on lease. It appears also that in the countries lying at a moderate distance from the sea little good land is to be found, except what has long ago been brought under cultivation. Not more than twenty years have passed since the establishment of the Australian Agricultural Company, which then acquired a tract of 437,000 acres in the country between the Hunter and Manning Rivers, and it still does not appear to be considered by farmers, agriculturists, shepherds, mechanics, &c., and now we find, after a lapse of 20 years, that the whole population of the county of Gloucester, in which these grants are situated, amounts only to 1426 individuals, though it has the immediate advantage of being situated near the mouth of a harbour which offers safety to coasting vessels.

The emigration will probably, for a considerable time to come, be directed to those countries which are north of 32°, but more especially to Australia Felix, or that part which extends from 32° south to 40°, as the latter appears to be in a much larger proportion of arable land than the Old Colony. The rapid rise of the colony of Port Phillip is almost unprecedented. It was regularly founded by Sir Richard Bourke in 1803. Before that time, however, the town of Port Phillip was established at Western Port and Port Phillip, and they were small and contained only a few inhabitants. The census of 1841, taken only four years after the establishment of the colony, gives it a population of 11,738 individuals. When it is considered that the colony at Port Jackson two years after its foundation contained only 10,000 inhabitants, this rapid increase of the population in the new colony augurs very much in favour of its superior soil and situation. It would however appear that in this new colony government has not taken such care as in the old, which are fit for cultivation, together with such lands as are for the present only to be used as pasture-grounds, but it reserves lands of the first description for the emigrants, and only expects to flock in preference to this country, which is so much more favourably situated by nature in almost every respect.

Education.—There are three colleges, or grammar-schools: two at Sydney, called Sydney College and Australian College, of which the former was attended by 135 students in 1838, but the number which attends Australian College is not stated. King's School, at Parramatta, was attended by 105 students in 1838. These high schools are supported by the payments of the students. The elementary schools are mostly maintained by government. In 1838 there were thirty-five schools, belonging to the church of
England, attended by 2468 children, 1396 boys and 1072 girls. The number of schools for the children of the Roman Catholics amounted to twelve, and were attended by 953 children, 473 boys and 382 girls. These schools were entirely supported by government, which amounted to more than 10,000L. Besides there were in the same year seventeen schools belonging to the Presbyterian; and six others belonging to other denominations of Christians. Government contributed to their support 1276L. and 210L. in kind, which was supplied by private contributions. The number of children attending these schools is stated in an unsatisfactory way. The number of private schools was sixty-seven. They were attended by 1860 children, of whom 932 were boys and 928 girls. The Atlantic and Indiaman are到来 the town of Sydney, 1700 miles away. These were hardly inhabited villages in England. They are most numerous in the most populous portion of the colony, in Cumberland.

Paramatta, or Parramatta, is built on the innermost recess of Port Jackson, in a hollow surrounded by rising grounds. The stipulation required not exceed 800 individuals, west, and north and south, but are neither paved nor lighted. The houses are unconnected, being generally detached cottages partly surrounded by gardens. A considerable number of them are of two stories, and many are brick or white freestone, and all roofed with iron-bark shingles. In this town is an observatory, erected by Sir Thomas Brisbane. The population probably exceeds 4000 individuals. It derives its import from the retail trade, and is chiefly clothed with homespun. In the country which extends along both sides of the river above the town have raised it to a commercial place, as considerable quantities of grain are shipped in this town. There are at Windsor five mills for grinding grain, two for hemp, and four tanneries. The retail trade, and the considerable retail trade, as the country south of it is the most fertile and best cultivated tract in Cumberland, the banks of the Hawkesbury excepted. South of Liverpool is Campbell-town, with about 400 inhabitants, some totaling and two tanneries.

Newcastle is built at the mouth of the Hunter River, which forms a harbour deep enough for merchant vessels, but the entrance is so narrow and crooked that it is dangerous for any vessels except schooners or cutters to work in and out. The town is built on the declivity of a hill of moderate elevation, which is united to the mainland by a low swampy neck of ground. About fifteen years ago it was a thriving place, but since the foundation of Maitland, and the establishment of a regular communication by steam-boats between this town and Sydney, it has lost its commercial importance, which now rests entirely on the coal-mines in its vicinity, which however are worked to some extent. Maitland is built on the southern banks of the Hunter, 40 miles from the mouth of the river, and on the plains, consisting of butts, and is irregularly built. It derives its importance from the extensive plains in which it lies and the excellent pasturage which these plains afford.

In the lately established colony of Port Phillip is Melbourne, built on the northern recess of the extensive bay called Port Phillip, and at the confluence of two rivers, the Marribumong and Yarra Yarra, each of which is navigable for small sea-faring vessels for several miles from its mouth. The town is only in its very infancy, but as the county of Bonke, in which it is situated, only four years after having been settled had risen in population to be the third of the whole colony, being on an inferior to Cumberland and Northumberland, it bids fair to outstrip in importance and size, in a comparatively short time, even Sydney, and may eventually become the capital of our settlements in that part of the world. The greatest advantage does not seem to be derived from its being built in a very fertile tract of land, but from its situation to the west of the western entrance of Bass's Strait. This may be considered as being a month's sail nearer to the countries lying to the west of the Atlantic and India than the Ocean that lies along as the sun is in the northern hemisphere, when the winds blow through Bass's Strait and round Tasmania with such force that it is almost impossible to stem them. Vessels departing from Melbourne may sail to the East Indies, the Cape, and Europe, all the year round, without being obliged to attempt the dangerous passage through Torres Strait. This circumstance will probably in a short time secure to this new town a superiority over Sydney. But the same advantages is also possessed by the town of Geelong in the county of Grant, which is built at the innermost recess of Geelong Bay, the most western portion of Port Phillip. A new town has lately been founded in Portland Bay.

Industry.—The manufacturing industry of the colony is still in its infancy. The most numerous manufacturing establishments are the mills for grinding and dressing corn, turned by wind, water, horses, or steam. In 1836 there were 85 of them in different parts of the country; 17 were at Sydney, which have been increased to 25. There are also a few of soap and candles, and a few distilleries and breweries; but all on a small scale. Common earthenware is made to a considerable extent not far from Sydney.

Two branches of industry however are carried on to some extent, the fisheries and the building of vessels. As a large number of spermaceti-whales and seals, which freest to the sea adjacent to the eastern entrance of Bass's Strait and the Strait itself, and a great number of seals are found on the islands in the same part of the sea, the whale and sea industry has an increasing number of gain to the colonists, and is carried on to some extent.

Vessels engaged in the Fishery, and their Produce.

<table>
<thead>
<tr>
<th>Years</th>
<th>No. of Tonnage</th>
<th>Weight of Oil</th>
<th>Weight of Spermaceti</th>
<th>Weight of Sealskins</th>
<th>Value in Pounds</th>
<th>Weight of Spermaceti Whales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1836</td>
<td>40</td>
<td>7500</td>
<td>120</td>
<td>210</td>
<td>1175</td>
<td>120</td>
</tr>
<tr>
<td>1837</td>
<td>47</td>
<td>9650</td>
<td>231</td>
<td>206</td>
<td>1172</td>
<td>206</td>
</tr>
<tr>
<td>1838</td>
<td>53</td>
<td>9313</td>
<td>284</td>
<td>219</td>
<td>1184</td>
<td>219</td>
</tr>
<tr>
<td>1839</td>
<td>62</td>
<td>12164</td>
<td>327</td>
<td>305</td>
<td>1288</td>
<td>305</td>
</tr>
</tbody>
</table>

As several of the forest-trees of New South Wales afford timber, and some of large dimensions of export, to the lately been set on foot. The vessels however are only of moderate size, the largest not exceeding 80 tons burthen. In 1837 the number built was 17, and their burthen 700 tons, and in 1838 there were built 20 vessels, with 808 tons burthen.

Commerce.—New South Wales, considered as a commercial country, holds a very high rank among our colonies, if its scanty population is taken into account. It is true that the value of its imports falls considerably short of that of our colonies in the West Indies, but they are supplied with colonial articles of consumption. It cannot be compared with that of Guyana, or of Jamaica, Trinidad, and the other islands of the West Indies. But in these colonies cultivation and commerce are unlimited, and the produce is calculated for a foreign market, and the population is in a general measure supplied with food and clothing by importation from foreign countries. As this is not the case in New South Wales, this colony, as far as regards commerce, is rather to be compared with those colonies which are in a similar condition, and in this point of view it makes a very conspicuous figure. The Canadians, with nearly a million of inhabitants, exported in 1837 only to the value of 26,707L., whilst New South Wales, with less than 120,000 inhabitants, yielded articles of export to the amount of 788,940L. In the same year the Cape, with
a population of nearly 250,000 individuals, exported only to the value of 281,385L. Tasmania is to be ranged with New South Wales, having in 1837, exported the value of 366,703L., or upwards of 80,000L. more than the Cape, though its population in that year hardly exceeded 45,000, amounting to only one-fifth of that of the last-mentioned colony. South Wales and Tasmania, are to be considered, in a commercial point of view, as intermediate between the tropical colonies in the West Indies and our other colonies which in cultivation and productions more resemble England. They have this advantage to the peculiar dryness of their climate and soil, by which they are rendered more fit for the rearing of sheep than any other part of the globe. As the principal article of export in both the colonies is wool, and as by far the largest manufacturer in which wool is consumed, is the commerce of both colonies is almost entirely limited to England and to those of its colonies by which they are supplied with such articles as are required for their consumption.

**Statement of the Quantities and Value of various Articles of Merchandise exported from New South Wales in 1837.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bark</strong></td>
<td>2 tons</td>
</tr>
<tr>
<td><strong>Beef and pork</strong></td>
<td>4,572 barrels</td>
</tr>
<tr>
<td><strong>Casks</strong></td>
<td>30,069</td>
</tr>
<tr>
<td><strong>Coals</strong></td>
<td>636 tons</td>
</tr>
<tr>
<td><strong>Corn—wheat</strong></td>
<td>2,025 bushels</td>
</tr>
<tr>
<td><strong>other grain</strong></td>
<td>745 do</td>
</tr>
<tr>
<td><strong>Sheep and swine</strong></td>
<td>463 do</td>
</tr>
<tr>
<td><strong>Oil—gallons</strong></td>
<td>474,932</td>
</tr>
<tr>
<td><strong>Spermaceti</strong></td>
<td>629,913</td>
</tr>
<tr>
<td><strong>Whalebone</strong></td>
<td>1,701 cars</td>
</tr>
<tr>
<td><strong>Whaleing gear</strong></td>
<td>10,253</td>
</tr>
<tr>
<td><strong>Wood—boards and planks</strong></td>
<td>389 sets</td>
</tr>
<tr>
<td><strong>Other wood</strong></td>
<td>10,225</td>
</tr>
<tr>
<td><strong>Wool—sheep's</strong></td>
<td>1,419,910</td>
</tr>
<tr>
<td><strong>Miscellaneous articles</strong></td>
<td>17,338</td>
</tr>
</tbody>
</table>

**Total value of exports produced in the country** £784,416

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apparel and slops</strong></td>
<td>7,413</td>
</tr>
<tr>
<td><strong>Beer and ale</strong></td>
<td>7,033</td>
</tr>
<tr>
<td><strong>Bread and biscuit</strong></td>
<td>2,235</td>
</tr>
<tr>
<td><strong>Coal</strong></td>
<td>190</td>
</tr>
<tr>
<td><strong>Flax (from New Zealand)</strong></td>
<td>600</td>
</tr>
<tr>
<td><strong>Guns—number</strong></td>
<td>635</td>
</tr>
<tr>
<td><strong>Gunpowder</strong></td>
<td>34,205</td>
</tr>
<tr>
<td><strong>hardware</strong></td>
<td>2,279</td>
</tr>
<tr>
<td><strong>Iron, wrought</strong></td>
<td>1,501</td>
</tr>
<tr>
<td><strong>Spirits—brandy, geneva, &amp;c.</strong></td>
<td>13,184</td>
</tr>
<tr>
<td><strong>Sugar, raw</strong></td>
<td>740,436</td>
</tr>
<tr>
<td><strong>Tea</strong></td>
<td>527,617</td>
</tr>
<tr>
<td><strong>Tobacco, unmanufactured</strong></td>
<td>91,687</td>
</tr>
<tr>
<td><strong>Manufactured, and snuff</strong></td>
<td>598</td>
</tr>
<tr>
<td><strong>Wine of all sorts</strong></td>
<td>5,483</td>
</tr>
<tr>
<td><strong>Woollen manufactures</strong></td>
<td>24,211</td>
</tr>
<tr>
<td><strong>Specie</strong></td>
<td>1,560</td>
</tr>
</tbody>
</table>

**Total value of the articles imported from other countries and re-exported** £90,504

The total value of exports amounted to 768,940L., that of the imports exceeded nearly by 100,000L., as it amounted to 864,255L. The difference between the imports and exports appears chiefly to have arisen from the imports of produce and manufactures, which were 4,253L. in number. The most important articles of importation were manufactured goods, as cotton manufactures, 68,740L.; silk manufactures, 32,266L.; woollen manufactures, 49,433L.; linen manufactures, 28,910L.; and apparel and slops, 68,950L. Other larger articles were tea, £27,134; and sugar, £16,818L., of which £284L. consisted of all sorts, 26,367L.; spirits, 21,000L.; beer and ale, 24,914L.; glass, 23,164L.; haberdashery, 34,893L.; hardware and cutlery, 22,310L.; iron in bars or pigs, 11,350L.; wrought-iron, 22,121L.; leather manufactures, 28,987L.; vessels, 17,097L., book paper, 12,728L.; and books, 12,289L.

**Number of Vessels which arrived and departed from Sydney in 1837 and 1838.**

<table>
<thead>
<tr>
<th>Description</th>
<th>No. of Vessels</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inwards—</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Countries, Vessels, &amp;c.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Britain</td>
<td>96</td>
<td>61,818</td>
</tr>
<tr>
<td>United States</td>
<td>5</td>
<td>1,529</td>
</tr>
<tr>
<td>Foreign Countries</td>
<td>165</td>
<td>23,239</td>
</tr>
<tr>
<td><strong>Outwards—</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Countries, Vessels, &amp;c.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>33</td>
<td>8,527</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1</td>
<td>517</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>260</td>
<td>127,847</td>
</tr>
</tbody>
</table>

In 1838 the colony possessed 41 vessels, of 6,229 tons, which were partly employed in the coasting trade, and partly in the fisheries. A steam-boat plied alternately between Sydney and Paramatta, and between Sydney and Maitland on Hunter River.

**Government.**—The colony is administered by a governor with the assistance of two councils. The council is called the Executive and the Legislative. The Executive is composed of official members, and the governor is obliged to consult it on occasions of any moment; but he is still authorized to act on his own responsibility, provided he states the reasons for so doing, and the reasons for not acting, when he frees himself from the control of the council. The members of the legislative council are not chosen by the inhabitants, but appointed by government, and consist partly of officers of government, and partly of landholders and merchants, with the chief-justice as president. He is authorized to impose taxes or to pass laws for the benefit of the colony, provided those laws are certified by the chief-justice to be conformable in spirit to those of England. The governor has the initiative of these laws. If the two councils are opposed to any act proposed by him, it cannot pass; and in that case the reasons of dissent are entered. The chief-justice, being authorized to declare whether the proposed law is or is not conformable to the laws of England, is considered as having a veto. Laws passed by the legislative council must within seven days be enrolled in the Supreme Court, and fourteen days after such enrolment they come into operation. The assemblies existing between the immigrants and their descendants on one side, and between the emancipists and their offspring on the other, seems to be a sufficient reason for withholding from the colony the boon of a free legislative body.

The judicature consists of a Supreme Court, composed of a chief-justice and two resident judges, with quarter-sessions, and courts of requests, which last have jurisdiction in matters of the extent of ten pounds.

Civil cases are tried by one of the judges, assisted by two magisterial assessors, if both parties do not agree to a trial. If there is a disagreement, the judge has a casting vote. Criminal offences are tried in the Supreme Court by seven military officers as a jury. The magistrates of the thirty districts into which the colony is divided sit daily for the trial of petty offences; their decision is finally subject to the appeal of the governor, who is advised by the chief police magistrate. These magistrates have at their disposal a large constabulary force, composed mostly of convicts, and a few of the native blacks.

**History.**—Though the western and northern coasts of Australia had been discovered by several Dutch navigators during the seventeenth century, that portion which at present constitutes the colony of New South Wales was
unknown up to 1770, when it was discovered by James Cook in his first voyage, and received him his present name. The southern parts of the coast however remained unknown up to the end of the last century, and up to that period it was thought that Tasmanias, which had been discovered by Tasman, was land westward into the interior of Australia. The part or that which lies on both sides of Portland Bay, was first seen in 1802 by the Frenchman Baudin, who had been sent, after the peace of Amiens, with some vessels to make discoveries in the Pacific, and it was soon afterwards surveyed.

The reasons which induced the British government to settle a colony on this coast, and the reasons which determined Governor Phillip to give a preference to Port Jackson above Botany Bay, have been mentioned in the article by that name. As it was soon after ascertain- tainly be called a happy one, as it is now known that at no other place along the coast is such a large tract of fertile land found, at no great distance from the sea, as west of Port Jackson, with the exception of Port Phillip. But even with this fertile tract the progress of the colony was slow in the beginning, which was owing to the circumstance that the first settlers were only convicts. It was not until some persons connected with the govern- ment, and others were salted, that they began to cultivate several tracts of land with success, that the colony began slowly to rise in the esteem of the public. How slow the progress of the colony then was, may be inferred from the circumstance that its population in 1810 did not exceed 10,000 individuals. It was about this time that one of the landed proprietors ascertained that the climate and soil of the colony were very favourable to the rearing of sheep, and as soon as that became known, many persons went to the colony to settle there. But they soon found out that land had been granted away, and that there was no floor space between Port Jackson and the Blue Mountains, was settled, or at least had been granted away, and it appeared impossible to extend the settlements farther westward, as several at- tempts to pass over the Blue Mountains had been frustra- ted. In 1813, when the colonists were visited by a most distress- ing season of drought, three enterprising individuals, Blax- land, Lachlan, and W. G. Leura, undertook the conquest of the mountains. They effected it by never descending into any of the ravines after having attained the upper part of the range, but by keeping on the high ground form- ing the separation of the innermost recesses of the ravines, which so much abound in the country. In 1825-26, the Kurrara, a large river of the south-western point of the colonists, and in the same year followed the discovery of that fine pastoral country the Downs of Bathurst. In the following year a practica- ble line of road was constructed over the mountain-ranges by the persevering efforts of the three enter- prisers, so that two of the rivers draining the Downs of Bathurst ran off in different directions, the government of the colony thought it incumbent on them to set on foot an expedition to explore the whole of the interior. Of the three, Mr. G. Leura, the surveyor-general of the colony, undertook the task in 1817. He first descended the southern river, the Lachlan, and after having traversed a great extent of arid plains, not un- like the steppes of Central Asia, he found that the river terminated in a swamp opposite the adjacent hill grounds, and ter- minated in extensive morasses, which were west of 140° E. long. In following the course of the Macquarie, after traversing arid plains, he also arrived at extensive marshes, in which the river terminated. As the two largest rivers then known had traced out, with the assistance of the surveyors, the northward course of the Macquarie, Oxley went eastward, passed over the Liver- pool Plains, which are still more extensive than Bathurst Downs, and reached the sea at Port Macquarie. Since this period, nearly every year some portion of the country has been discovered and explored. In 1819 the woody country separating the Cow Pastures from the connecting Table- land was penetrated, and Goulburn Plains, and soon afterwards Moneroo Plains, were discovered, and here the Mur- rumridge River was found, which, it was soon ascertained, emptied itself into the interior of Australia. In 1823 Hovell and Hume, two enterprising agriculturists, penetrated from Goulburn Plains in a south-westerly direction into that portion of the continent which now is called Australia Felix, and arrived at Port Phillip. In 1827 Allan Macquarie, who had been sent by government to explore a country lying to the west of the Coast Range, north of Liver- pool Plains and Port Macquarie, and he succeeded in traversing a tract extending over four degrees of latitude, which had never been seen by Europeans. He termin- ated his journey at the head of a large river, which was later known as the Macquarie. Oxley and his party had been known for twelve years, as it drains the Plains of the Connect- ing Table-lands, whence it descends to the west. He traced the river down its right bank until he had passed every rapid and waterfall, and he then launched a boat which he had conveyed overland from Sydney, and descended the river to its confluence with the Millewa, where he entered the Murray. He pursued his course on the Murray, passed the mouth of the Darling, and followed the river to its mouth. In his report he refers to the discovery of a very large river, which according to his account was called Kinrara, and drained an immense tract of fertile country about 300 miles north of Liverpool Plains. The place was sent for, but no steps were taken to follow up this report. In this journey he traversed the hilly country east of Liverpool Plains, and farther north the fertile tract lying west of the Harwich or Nundawar Range, and arrived at last in 70° S. lat., at a considerable distance from the capital of the colony. The Murray was sent for, but no steps were taken to follow up the discovery of this river. In his third expedition (1836) Mitchell descended along the course of the Lachlan, and found its bed everywhere the most extensive morasses, which had prevented Oxley (in 1817) from extending his expedition farther westward. He traced the bed of the Lachlan to the place where it discharges in rainy season the surplus of its waters into the Murray, the drainage area of which includes the lower part of the course of the Darling, he passed to the country south of the Murray River, traced the lower course of its great branch, the Millewà, to its confluence with the Bayang, and a part of the last-mentioned river; and then, by the north coast, and by the route to the south-west, he passed round the northern extremity of the Grampians, and descended from the higher grounds to the sea along the course of the Nangeela. From Portland Bay he returned to the colony by travelling across the highlands in which the river rises, and by the route to the northward to the Murray River. He called this country Australia Felix, on account of its superior fertility and abundance of permanent streams. The discovery of this part of the country and the infor-
WAL 24 WAL

publication obtained respecting the fertile tracts of land which surround the excellent bay called Port Phillip, determined the government, Sir Thomas Bourke, to plant, in 1837, the New Colony at that place, and to found the town of Melbourne. The rapid rise of this colony has led to a closer examination of the surrounding country. Mr. Tyers surveyed, in 1839, the plain which lies to the south of Port Phillip extends westward to the boundary-line of South Australia; and Count Strelecki, a Polish refugee living at Sydney, traversed, in 1839, the interior of the mountain-region of the Australian Alps, ascended the high summit of Mount Kosciusko, determined the true latitude of the summit, and described the coast and the interior of that land, and from that place to Melbourne. But only a small portion of the country surrounding Port Phillip has been explored by these expeditions. It can however hardly be doubted, that in a few years this region will be known as well as the countries lying to the south, west, and north of Port Jackson.

(Cook's First Voyage: Hunter's Historical Journal of the Transactions at Port Jackson and Norfolk Island; Fidler's Voyage to Terra Australis; Oxley's Journal of the Interior of South Australia; and the South Wales) Baron Field's Geographical Memoirs on New South Wales; P. Cunningham's Two Years in New South Wales; Sturt's Narrative of Two Expeditions into the Interior of New South Wales; Breton's Excursions in New South Wales, by Sir William Jervis; Bennett's Travels in New South Wales, Balata, &c.; Mitchell's Three Expeditions into the Interior of Eastern Australia, &c.; Allan Cunningham's Brief View of the Progress of the Interior Discovery in New South Wales, in London Geographical Journal, vol. iii.; Winter's On the Identity of Port Phillip, in London Geographical Journal, vol. vi.; Parliamentary Papers respecting New South Wales, 1841; Tables of the Revenue of Population, &c. of the United Kingdom, 1842.)

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Wales, William, an English mathematician and astronomer, was born about the year 1734, of parents in humble circumstances. It is not known in what manner he received the rudiments of education, and it is probable that he was one of the many persons who, for their attainments in science, owe more to nature and intense application than to the precepts of a teacher.

He first distinguished himself as a contributor to the Ladies' Diary, a work containing an extensive collection of astronomical and mathematical solutions, which was begun in the year 1704; and under the able direction of Brightton, Thomas Simpson, and Dr. Charles Hutton, it had no small influence in promoting the advancement of science in this country during the eighteenth century: it must, however, be observed, that it is no longer a period of the century, by several eminent mathematicians. Many of the solutions which were given by Mr. Wales are signed with his own name, but occasionally they appear under fictitious signatures.

The merit shown in these solutions appears to have procured for him a recommendation to the government; and in 1788 he was appointed, together with Mr. Dymond, to go to Hudson's Bay, for the purpose of observing in that region the transit of Venus over our sun's disc, which was to take place in the following year (June, 1789). The observations were made at Fort Prince of Wales, and each of the observers was so fortunate as to witness the exterior and interior contact at both the commencement and end of the eclipse. Moreover, Mr. Wales made a number of astronomical observations, an account of which was published in the Philosophical Transactions for 1789; and again, in 1772, in a separate work, entitled General Observations made at Hudson's Bay, &c., Lon- don. He also, principally, subscribed for the observa-

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Mr. Wales returned to England in 1770, and in 1772 he published 'The two books of Apollonius concerning Determinate Sections,' London, 4to. In the same year he was appointed, together with Mr. Bayly, and with the title of astronomer, to accompany Captain Cook in his second voyage for the circumnavigation of the earth; and on the return of the expedition he was, in 1776, elected a fellow of the Royal Society. A series of astronomical observations which had been made during the voyage, with an introduction by Wales, was published in 1777, at the expense of the Board of Longitude, in a quarto volume, with charts and plates. Mr. Wales's 'A tract entitled Observations on a Voyage with Captain Cook,' and, in 1778, his strictures on an account of the same voyage, which had been published by John George Forster, who, with his father, had been on the same voyage, were both published at London, by Foulis, J. G.) In this work the accuracies made by the elder Forster against the captain and his officers are shown to be entirely without foundation.

In 1776 Mr. Wales again embarked with Captain Cook in a disapproved, as it is the case, the island, or Cape, is now supposed to have been that which was, in 1808, discovered by the Swan and the Otter in 54° 29' S. lat. and about 2° E. long. from Greenwich.

Mr. Wales is said to have been the author of the dissertation on the hemispherical rising of the Pleiades, which is annexed to Dr. Vincent's Voyage of Nearchus.

Walhalla, one of the most remarkable architectural monuments of the present age, stands on the brow of a hill on the north bank of the Danube, and about 250 feet above the river, the foundations being laid by Maximilian I. It was completed in 1821, the ceremony of laying the first stone did not take place till Oct. 18th, 1830, and exactly twelve years afterwards, October 18th, 1842, the building was solemnly inaugurated.

Though the title of the edifice is sufficiently appropriate and expressive, being that of the paradise of the Scandinavian mythology, consequently suitable enough for what is a Teutonic Pantheon, commemorating Teutonic intellect and genius, it seems quite at variance with the ancient character, which is strange to feel the title to be so extremely important as it is in itself, this circumstance has given rise to much captious objection, it being contended that a structure so eminently national in its purpose and in name ought to have been no less strictly national in style, and that if...
should have presented nothing to call up any ideas of Greece, or any classical associations. Even had the present discrepancy been avoided by selecting a name less in direct opposition to its architectural physiognomy, the propriety of adopting such style at all, or any other than the Grecian or Roman, would have been very questionable; still there are considerations, which, if they do not surmount all objections, may reconcile us tolerably well to what has been done. Unless it had been upon a much more extensive scale, an edifice in the Gothic style would have looked diminutive, especially in comparison with some of those colossal fabrics of the kind which are the architectural boast of Germany. There is reason too for apprehending that it would have partaken too much of a religious character—have looked very much more like a church than a national pantheon and shrine of monumental sculpture. The experiment would have been rather a hazardous one at the best, since, with all their study of their national antiquities, the Germans have not yet been very successful in imitating the architectural style of their ancestors; whereas, by copying the Doric, though oriental, it has been disowned, all the danger attending experiment has been avoided, and what is in itself a most noble monument of art has been ensured.

It might be supposed that the Walhalla was not a mere copy of the Athenian edifice, for it exhibits the Parthenon reared aloft upon a widely-spreading enormous substructure of Cyclopian masonry, forming successive terraces and flights of steps leading up to the platform on which stands the Doric temple itself, decorated with a portico and porch, which might be said to be without precedent, as no instance of any similar arrangement in antient temples has been preserved to us, for of that at Pireneæ [Temple, p. 183, col. 2] no more remains than to show that such was originally its disposition. In case therefore, the Parthenon itself becomes only a portion of the general design—the superstructure crowning a colossal architectural mass, to which it is in a manner what the dome of St. Paul's is to that edifice. Consequently, though the temple portion itself may look almost as a smaller than would denote it as the substructure, the whole becomes infinitely more imposing, more picturesque, and more varied in aspect, as viewed from different points, and more or less foreshortened as seen from below. In geometrical elevation the whole is of nearly pyramidal outline, and the temple seems to stand immediately over the ascent up to it, but in the real building the appearance is very different, owing to the manner in which the terraces and first flight of steps are brought out in advance of it.

The terrace is only a third of a mile in length, and from a considerable distance that the general outline and mass display themselves, for on approaching and beginning to ascend the visitor loses for a while sight of the temple itself, until he reaches the last flight of steps leading immediately up to it, when it is seen all at once into view, with its magnificent pediment. This is well contrived, the effect being far more impressive, and conveying an idea of greater magnitude than were the building seen during the whole course of the approach to it. Owing also to the ascent returning parallel to each other and to the building, views are obtained in different directions and at different heights; while the terraces and their colossal masonry, which show scarcely at all in a more general prospect or drawing, when seen close at hand and immediately before it, from the substructure, are overpowering, and the enormous substructure or basement rises altogether 138 feet to the level of the upper platform. Instead of being enclosed on its sides by pedestal walls, carried up horizontally, the first or lowermost flight of steps has merely low perpendicular walls, and is intersected by two or three passages, none more than 13 feet wide. Between the enormous substructure or basement rise altogether 138 feet to the level of the upper platform. Instead of being enclosed on its sides by pedestal walls, carried up horizontally, the first or lowermost flight of steps has merely low perpendicular walls, and is intersected by two or three passages, none more than 13 feet wide. Between the steps ascending. On the lower terrace there is a bronze door (marked on the plan), which forms the entrance of a spacious crypt or vaulted hall beneath the Walhalla, called the Hall of Expectation, and intended both to give more immediate access to the interior, and to serve as a repository for busts of eminent persons who are still living, and are afterwards to be removed into the Walhalla itself.

The Walhalla forms externally a magnificent Doric octastyle peripteral temple, with its principal front facing the south. It is entirely constructed of white marble, and is of nearly the same dimensions as the Parthenon, being 104 by 225 feet; the columns and entablature 45 feet high, and the pediment 12: making, with the substructure, a total height of 195 feet. In beauty of material and execution it may fairly be allowed to rival its original, and it gives a complete idea of what the Parthenon itself must have appeared in its perfect state; for it exhibits not merely the semblance of Grecian architecture, but its characteristic grandeur of construction, the blocks of marble being of the Waldenses dimensions, and those forming the architraves about 18 feet in length. All the details, including antefixe and acroteria, are most carefully studied, and beautifully finished; and yet there is one species of decoration peculiar to the order which has been omitted, there being no sculpture in the metopes of the frieze. The reason for this omission however is sufficiently apparent, because, owing to the situation of the building, sculpture would have been entirely lost, except as giving a general expression of richness; for seen from below it would not have been distinguishable, and viewed near would have been seen so very near and so immediately from beneath, and would have been so greatly foreshortened, as to be unintelligible. Still there is a most magnificent display of sculpture, and in a truly classical taste in the two pediments, after designs by Rauch, which were modelled and executed by Schwanthaler. That of the south pediment consists of fifteen figures in full relief, the one in the centre (of colossal size and seated) representing Germany, and the others symbolical of the different Germanic states. The sculpture of the other pediment, which is entirely the work of Schneller, consists of the same number of figures, representing the victory obtained by the Cheruscii over the Romans.

Of Grecian temples the beauty was confined almost entirely to the exterior, there being no architectural display of any kind within, or very little; but the interior of the Wallhalla is of most striking splendour—most sumptuous in point of decoration, and highly original in its design, which exhibits great happiness of invention. Here Klenze shows himself not an imitator of the ancients, but their rival—their pupil, but also a master in his art. The arrangement will be sufficiently understood from the plan, which shows that it consists chiefly of a single hall (150 by 57 feet), with a space answering to the opisthodomus...
of an antient temple, at its north end, but separated from it only by a screen of Ionic columns, which order is continued throughout in the ante at the angles of the magnificent pilasters, which divide the hall into these compartments. The entire length of the interior therefore becomes 175 feet, and though there was nothing to prevent the whole being laid into one uninterrupted space, the division serves to give the idea of greater extent, and greatly tinges the pantomime may be said with regard to the piers, whose boldly projecting masses break up what would else have been the too great monotony of the plan, and produce a pleasing succession of parts. Besides being of essential service in supporting the roof, the Ionic columns, in some measure screens, and prevent the disagreeable formality that would attend the ranges of so many busts all of the same size, on each side, if they were all exposed to view at the same time. What more than anything else gives the plan of this room an original character, and unborrows architectural character, is the construction and decoration of its roof, and the mode in which the light is admitted through it. According to the original design, it was intended that there should be a vaulted and coffered ceiling; yet, as that would have been too much at variance with the strictly Grecian character of the exterior, the architect afterwards conceived the idea of omitting ceiling or inner roof altogether, and adopting a single or open roof, without masking of any kind. There is therefore no contrast between the external and internal mass in this latter; the former becomes highly expressive of the first, and is made to repeat one of its most beautiful characteristics, namely, the pediment, which feature is obtained within the building by the sides of the roof, and the horizontal cornice being carried across from the opposite piers. Besides their expressive form and the effect attending a series of them, these internal pediments are rendered exceedingly decorative, their faces being divided into panels filled in with rich open-work arabesques and figures, in white and gold, partly relieved with colours. The ceiling itself is a dazzling splendour, being almost entirely lined with plates of gilt bronzes, and with gold stars, and other ornaments on an azure ground in its coffers. Through this the light is admitted in light or circular expanse, a part of the deposit of the plan, which follows the form of the roof, and is filled with sheets of plate-glass framed in bronze. Thus the whole is most effectively and beautifully lighted within, without either windows in the walls or lanternia on the roof.

With what has thus far been described all the other decorations of the interior are in a corresponding style of magnificence, and all of the most costly workmanship and material—white and coloured marbles, bronze, gilding, polychromy, sculpture. The coloured marbles from Tegerusse, distributed into three larger compartments answering to those of the plan. The shafts of the ante and columns are of a brownish red marble, resembling the antique African, and their bases and capitals are of the same. There is a kind of column with coloured glass, and yet it seems to be grained; while the walls are lined with the same material, and of nearly the same hue as the columns. In the entablature the architrave and cornice are white, relieved by gold and greens on their mouldings; but the frieze, which is of unusual depth, is entirely of white marble, and with only one exception, is without interruption by the piers, and where that part is decorated with small panels of sculpture, a continuous bas-relief, representing the progress of civilization in Germanic races from the earliest times to the introduction of Christianity by St. Boniface. This stems over the whole length of the sculptured panel, extends altogether to two hundred and thirty feet, was composed by Wagner and executed by Petrich and Schlopf.

Besides this principal Ionic order, which is 204 feet high, there is a second one (174 high) of colossal Caryatides, representing Valkyria, the female genius in Scandinavian mythology, whose office it was to welcome the souls of the blessed into the halls of Odin and the Walhalla. Of those figures there are two over each pier, which is not carried up solid higher than the first order, so that they stand detached from the walls, and thereby give an air of lightness to the upper part of the interior. These statues, of which there are altogether fourteen, six on each side and two over the嘲笑 at the farther end, where there is an upper gallery above the opisthodomus, were executed by Schwantaler, and are of marble, but slightly polychromed, after the chryso-elephantine fashion of the antients, in imitation of the great colours, "silver and gold, crimson and sapphire." The order, which was also in some degree termed Inosc, inasmuch as the figures bear voluted capitals on their heads, is raised upon a podium of greyish marble, and the frieze of its entablature is ornamented with precisely the same devices that are cut in the sculptured slab over the ante, and thereby have been read by the antiquaries who have described it. It is Imperfect in as it is, this description of the architectural decorations has detained us so long, that we may seem to have overlooked the principal objects of all—the very works for which the structure was erected as a repository. Namely, the effigies of the illustrious persons here commemorated. In regard to mere busts being adopted instead of statues, as would seem more befitting so sumptuous a pantheon, it may be observed that, besides the impossibility of having anything like the same number of heroic busts as there are figures in the original design, we so far appeared to have got rid of, namely, that which would have attended the strange variety of costumes: for while that of the older periods would have been more or less imaginary, that of more recent times would frequently have been formed a most grotesque contrast with the edifice itself; whereas the busts all partake of the same classical character, and are in perfect keeping with the architecture. They are also skillfully arranged, so as to show that they are parts of a whole, rendered by the introduction of columns, which, though they appear too much crowded, being confined to two rows, the lower one of which is placed upon a continued pedestal of beautiful yellow marble, the others on consoles; and, as presiding over the respective groups of busts, there is each one a statue, more grand in form and genius; also antique marble seats and marble candle-labrb. In short the whole arrangement is eminently tasteful; full of contrast and variety, without the slightest confusion. Equal study has been bestowed on every part of the building, and every ornament, from being a mere restoration or copy of the Parthenon, or designed merely according to antient precedent, that the interior is a perfectly fresh architectural conception, faithful to the spirit of Grecian art, and giving no countenance to such absurdities as the little room above the ante. No other edifice of modern times is so intensively Grecian, or so highly elaborated as a monument of art. A truly monumental fabric it certainly is, being so constructed that it may be preserved for many ages, as such there will hand down the memory of its royal function and architect to a distant posterity, which, along with the names of Pericles and Phidias, will place those of Ludwig of Bavaria and Leo von Klenze.

WALKER, J. J., D. L. A. H., was born at Worsnough, near Barnesley, in the West Riding of Yorkshire, probably in the year 1616, and was educated at University College, Oxford, where he took his degree of M.A. in July, 1638, and was chosen Fellow of his college in August following. In 1640, while he was thirty, he showed himself to be a man of high talent, being admitted to seats in the University in holy orders. Becoming now very distinguished as a college tutor, he remained at Oxford till he was expelled from his fellowship by the parliamentary visitors in May, 1646; on which he retired to Rome. On the Restoration he was re-nominated in his fellowship; but he soon after made another visit to Rome in the capacity of travelling tutor. Returning home in 1649, he might then have been elected master of his college, but declined the appointment. He accepted it however on the death of Dr. Richard Cromwell in 1658.

Walker's tutors at Oxford had been Mr. Anderson and Mr. Abraham Woodhead, both of whom appear to have been then inclined towards popery; which Woodhead after wards openly professed. Their instruction seems to have led him to Rome; where he probably remained till the same faithful line his election to the mastership of University College. Indeed it is asserted by Anthony Wood that at the time of his appointment to this office he was actually residing in Oxford, and in his seminar at Magdalen or Hoxton, near London, in which young men were educated in the Roman religion. It was not however till 1670 that

* In the number of the Civil Engineer and Architect's Journal for April, 1840, will be found an excellent account of this sepulchral repository, and how it was opened to the public by the late Mr. Lord, and other works in the Walhalla, arranged chronologically, beginning with Herodes Atticus, 1849, and terminating with Goethe, 1842.
attention was drawn to his principles and conduct by the publication of his Latin translation of Sir John Spelman's Life of King Alfred, which appeared at Oxford in a magnificient folio in 1678. In October of this year, in the ferment excitated by the death of Sir Edmundby Godfrey, complaint was made in the House of Commons of the dangerous tendency of some of the notes to this work, and also of Walker's connection with the seminary at Hoxton. But no consequences followed; and, although the matter was mentioned again in April, 1679, the master of University College came and still held his ground; but only, had he ceased to celebrate in his lodgings, but converted two of the rooms of his college, forming the lower half of the side of the quadrangle next the chapel, into a Romish chapel, which he opened for public use on Sunday, 21st of August, 1686. He at the same time obtained a mandate from the king to sequestrate the revenue of a fellowship towards the maintenance of his priest, and erected a statue of James over the entrance of the college gate; and the next year he set up a press in the back part of his lodgings, in the hope of making his escape with the payment of certain of his claims to his majesty, for the avowed purpose of printing books against the established religion. Many tracts, principally written by Woodward, issued in the course of the next two years from this press.

The former things of course made him a marked man when the Revolution came. He left Oxford on the 9th of November, 1688; and on the 11th of December following, he, Andrew Pulton, a Jesuit, and others, put themselves into a coach at London, in the hope of making their escape; and set out. But during his stay in London, was seized all papists that attempted to leave the kingdom, the party turned back. They were however pursued, seized, and carried first to Faversham, and thence to London, where Walker was committed to the Tower. On the 13th of December, according to the account of the doctors of the University declared him no longer master of University College; and on the 15th of the same month his place was filled up by the election of Edward Ferrer, the present master.

On the 23d of October Walker was brought up by habeeus corpus to Westminster Hall, and sued for bail; but he was immediately sent for, with other prisoners in the same circumstances, to the bar of the House of Commons, where he was examined, and was denied that he had ever altered his religion, the principles which he now professed being, he said, the same which had been taught him in his youth by his tutor Mr. Anderson, that he was remanded to the Tower on a charge of sedition, to be placed and launced in the Tower. Being again brought up to the court of King's Bench, he was allowed to give bail and was set at liberty; nor was he further troubled, although he was excepted out of the Act of Pardon soon after passed (the 2 Will. & Mar., sess. 1, c. 10). He spent the remainder of his days in retirement, and partly abroad; but he died at London, on the 21st of January, 1699, in the house of Dr. Radcliffe, who was one of his old pupils, and by whom he had been for some time principally supported. He was buried, at Radcliffe, in the churchyard of the parish church, and so, the common place of interment of London Roman Catholics of the upper classes.

Walker, who is admitted in all hands to have been a man of learning and talent, is the author of, or connected with, of which the principal are: a Brief Account of Antient Church Government, 4to, Lon., 1662; a 12mo. tract, titled "Of Education, especially of Young Gentlemen," first printed at Oxford in 1673, and for the fourth time in 1693; a Latin treatise on the "Prerogative of Princes;"" The Marshalls of the Realm, and Membrum Nominalium, Libri Tres," 8vo, Oxford, 1673; "Some Instructions concerning the Art of Oratory," 2nd edition, 4to, Oxford, 1682; "An Historical Narrative of the Life and Death of Our Saviour Jesus Christ, &c.," 8vo, Oxford, 1685 (the sale of which was procured by the vice-chancellor of the University, on the ground of the alleged papish tendency of some things in it); "Some Instructions in the Art of Grammar," 8vo, Lon., 1691; and "The Greek and Roman History illustrated by Coins and Medals," 8vo, Lon., 1692; a work which formerly had a high reputation.

WALKER, CLEMENT, is known as the author of a work entitled 'The History of Independence,' the first part of which was published, in a small 4to, under the pseudonym of Theophilus Versi, in 1648, in two editions, one much more extended than the other; the second (a much more considerable volume) in 1649; the third, under the title of 'The High Court of Justice, or Cromwell's New Slaughter House,' in 1651. A fourth edition, by Dr. John Drury, who calls the book, "The Life, Letters, and Times of his King, and Country," appeared in 1661, along with a reprint of the other three parts, in which the second has the new title of 'Anarchis Angliae.' In this edition the work is entitled "The Compleat History of Independence," and is very scarce, but the first part has been reprinted by Baron Maspero, in his 'Select Tracts relating to the Civil Wars,' 2 vols. 8vo, 1815.

The little that is known of the personal history of Clement Walker is chiefly to be found in Wood's "Athenea Oxonienses" and in his own work. He was born at Cliffe, in Dorsetshire, towards the close of the sixteenth century, and there he appears to have spent the early part of his life: the register of that parish, according to Hutchins, in his "History of Dorset," gives the date of his birth as 1629, the baptisms of three sons of Mr. Clement Walker and Frances his wife: Thomas in 1626, Anthony in 1629, Peter in 1631. Wood mentions another son, John, "sometimes a commoner of Lincoln College, Oxford." This John was, it would seem, that Mr. Ferrar, who, having studied at Christ Church, entered the University, but no record of his matriculation there remained. Before the breaking out of the contest between the king and the parliament, he lived, Wood tells us, on an estate he had at Charterhouse, near Wells, in Somerset, and the whole of the country was under the control of the Exchequer. At this time he was reputed both a sound royalist and a good churchman, holding puritanism as well as dissent in avowed dislike. Nevertheless, when matters came to a crisis he declared himself for the people, and was made as one of the members for the city of Wells to the memorable second parliament of 1640. But notwithstanding what is thus asserted by the Oxford antiquary, we must not too hastily assume that Walker at this time really changed either his professions or his principles. He appears to have continued to the end of his life attached to the monarchical part of the constitution, and he had probably been from the first opposed to the excesses of prorogative. In parliament he necessarily acted with the whole party of parliament, and in that sense his course they followed, to his own principles, and his ability and reputation for integrity soon acquired him considerable ascendancy with his party. But his book is by no means, as it has been generally represented, an indistinguishable part of the proceedings of Cromwell and his associates. Yet his work has preserved a good many minute facts not elsewhere to be found; and although the author sees no sense, and no good of any kind, either to the right hand or the left of the middle way in which he and his friends attempted to walk, it throws a considerable, though it may be a highly-coloured, light on the events and characters of the time. Walker also published anonymously several other short tracts against the republican government, a list of which, although as they are known, is by no means complete; the most important of them are incorporated in his History. His authorship of that work was discovered soon after the appearance of the second part, upon which he was immediately consigned by Cromwell to the Tower, where he was for some time kept in confinement. When the news of his arrest was sent to the press, the third part of his History, which, as may be conjectured from the title, is the most violent portion of it, was not recover until in October, 1651.

Walker was one of the two principal witnesses (William Prynn being the other) of Colonel Fiennes, before the council of war, at St. Albans, in November, 1643. He was the recorder of Bristol. (See the proceedings in State Trials, iv. 483.)
316. Lord Clarendon upon this occasion describes Walker as 'the painter of all of Somersetshire, of a good form, and by the loss of that the most spoilt; who had been in the town when it was lost, and had strictly observed all that was done.'

WALKER, SIR EDWARD, is said to have been the son of a Catholic gentleman, Sir Walter and Mrs. Roobers, in Netherstowe, Somersetshire. In early life he appears to have held some office in the household of Thomas, twelfth earl of Arundel (the collector of the Arundelian Marbles), and, having accompanied that nobleman as his secretary on the expedition to Scotland in 1639, he then became known to Charles I., who, taking him into his service, made him his secretary-at-war, and to that end, in June, 1644, the appointment of clerk extraordinary of the privy council. In this latter year also, while he was with the king at Oxford, the treaty was referred on him the degree of M.A.; and, in 1645, he received the honour of knighthood. After the execution of his royal master, Walker fled to Charles II., whom he accompanied to Scotland in 1650, and, after the failure of that enterprise, remained in the Continent. Charles, during his exile, made him Garter King at Arms; and, after the Restoration, he was appointed one of the clerks of the privy council. Both these offices he held till his death, at Whitehall, 19th February, 1677.

Walker's mention of Charles II. is said to have been commissioned by Lord Clarendon, whom he is said to have assisted in the parts of his history which relate to military transactions.

In 1659 there was published in London a folio volume, entitled 'The History of Four Monarchies, upon several occasions, by Sir Edward Walker, Knight, &c.' It is dedicated to the queen in an address signed Hugh Clopton, and there is also a dedication of the Discourses by Walker himself, 'to his grandchild, Edward Clopton, Esq. of Clopton,' dated 1659, followed by a postscript dated 1674, in Stratford-on-Avon, directing them to make public after his death. It is quite clear that all the Discourses were printed for the first time in 1659. In 1820 was published, in London, in an 8vo volume of 131 pages, with plates, a new and accurate account of all the preparations, ceremony, &c., on the coronation of his Majesty King Charles the Second, and a minute detail of that splendid ceremony, &c., from an original manuscript by Sir Edward Walker, Knight, Garter principal King at Arms at that period.

The common biographical accounts attribute to Sir Edward Walker a work on tactics, entitled 'Military Discoveries,' published in folio, in 1675; and also the following works, which are stated to have appeared in his lifetime, but the dates of none of which are given:—'Iter Carolinum,' however, appears to have been contained in the 'Historical Discourses,' the first of which is entitled 'The History, Progress, and Success of the Arms of King Charles I., from 30 March to 23 November, 1644,' written by his Majesty's special command, and corrected almost in every page with the 'second,' 'of his Majesty's unfortunate success in the year following.' The fourth discourse is entitled 'Observations on L'Estrange's Annals of Charles I.;' and the eighth is a Review of the entire reign of that king. The third is a 'Journal of the ExpDITION to Scotland,' and the fourth is 'A Discourse of the Last Happy Peace.'

A complete list of Walker's works is not easy to make, and a summary of his life and career is not easy to give. He was a soldier, a sailor, a politician, a writer, a painter, and a wit. He was a man of many parts, and a man of many talents. He was a man of many friends, and a man of many enemies. He was a man of many passions, and a man of many vices. He was a man of many virtues, and a man of many virtues. He was a man of many weaknesses, and a man of many weaknesses. He was a man of many merits, and a man of many merits. He was a man of many faults, and a man of many faults. He was a man of many mistakes, and a man of many mistakes. He was a man of many successes, and a man of many successes. He was a man of many failures, and a man of many failures.

WALKER, ROBERT, a clever English porttrait-painter contemporary with Vandyck, and the principal painter employed by Cromwell. Walker painted several portraits of Cromwell, but his most celebrated work was his portrait of the Protector, which was hung in the Pitt Palace at Florence. It was purchased by the reigning grand-duke in Cromwell's lifetime for 500l. He sent a pension to his family for the entire duration of his life. Walker had a very high reputation as a portrait painter of the Protector. The agent had much difficulty in procuring one to his satisfaction; but he at last found this by Walker, in the possession of a lady who was related to Cromwell, and who, being unwilling to part with the portrait, refused to sell it. During the interview, the agent asked him what appeared to her the exorbitant sum of 500l. for it. The amount was however immediately paid, and she was obliged to part with her picture. Another was in the possession of Lord Mountford, at Horsham is the painter's design for the engraved portrait of the Protector, all the features of which are carefully observed and transmitted to the engraver by Mr. Creswell, who found it at an inn in the county. There is a gold chain upon Cromwell's neck, to which is appended a gold medal with three crowns, the arms of Sweden, and a pearl: it was sent to him by Christina of Sweden to celebrate his return from the campaign. The emblem is engraved on the Latin epigram. There was another in the possession of the earl of Essex at Cusahury; and a fourth in Lord Bradford's collection, with the portrait of Lambert in the same piece. It was one of these portraits that Lebrum wrote the following eulogy on:

'By lines oth' face and language of the eye,
We find him thoughtful, resolute, and stily.

'From one of R. Symonds's pocket-books,' says Walpole, 'in which he has set down many directions in painting, and with whose suggestions he has been confronted, return.' Walker's portrait of the Protector is said to have been painted both in the life and death, and to have been painted both in the life and death. Walker's portrait of the Protector is said to have been painted both in the life and death. Walker's portrait of the Protector is said to have been painted both in the life and death.
serving the strictest discipline under the most difficult circumstances, and dividing himself between the most opposite duties,—now heading a scholarly party, now reviving the war under the guise of a rousing sermon in the cathedral. The end was the same: the sedition was suppressed, raised, on the 30th of July, by Major-General Kirk making his way with three ships over a boom which James had thrown across the river. Walker soon after came over to England, and having published a pamphlet in which he had been engaged, under the title of 'A True Account of the Siege of Londonderry,' in a quarto pamphlet, he received in November the thanks of the House of Commons for his heroic exertions. His account provoked some of his assailants in a vindication published the same year; this was followed by an anonymous 'Apology for the Failures charged on the Rev. G. Walker's printed Account,' also 4to, 1689; and that by a 'Narrative of the Siege,' &c., and by various pamphlets abusing him, as having been one of his assistants in a vindication published the same year, which was answered the same year by a friend of Walker's, in another quarto pamphlet, entitled 'Mr. John Mackenzie's Narrative of a False Libel.' Meanwhile Walker, having been created Doctor of Laws, and having been nominated Bishop of King William to the bishopric of Derry; but having resolved to serve another campaign before entering upon his episcopal duties, he was killed at the battle of the Boyne, 1st July, 1690.

The British Museum a pamphlet of ten pages, entitled 'The Substance of a Discourse, being an Encouragement for Protestants, or a happy prospect of glorious success, &c., occasionally (sic) on the Protestants' victory over the French and Irish Papists before Londonderry, in raising the siege, 1689,' he is called 'A Discourse on the Governor of the City, London, printed by A. M. in the year 1689.' This was probably a reporter's publication. Prefixed on the title-page is a rude wood-cut, which seems to have been a print for a portrait of Walker.

WALKER, JOHN, D.D., was born Cambridge, in the parish of Friern-Barnet, Middlesex, 18th March, 1732, and was brought up to trade, but adopted the profession of an actor, which he followed with no great success till 1766, when he quit the stage, and joined Mr. James Usher in establishing a school at Kensington Gravel-pits. This partnership lasted only about two years, after which Walker set up for himself as a teacher of elocution, and soon became greatly distinguished in that capacity. Not contenting himself with England, he went to Ireland, and to various provincial towns, especially Oxford, where early in his career the heads of houses invited him to give a course of private lectures in the University. He soon also began to employ the aid of the press in disseminating his instructions, starting a journal which he professed. The settlement of the pronunciation of the English language upon analogical principles, and according to the best usage, was certainly attempted by Walker more systematically than by any preceding writer. There is a great deal of sound sense in his work, which are by good sense and careful inquiry, as well as a respectable amount of information, cannot be denied to have done considerable service in that matter. His first publication was a prospectus of his Pronouncing Dictionary, under the title of 'A General Idea of a Pronouncing Dictionary of the English Language,' which he printed in quarto in 1772. This was followed in 1775 by 'A Dictionary of the English Language, answering at once the purposes of rhyming, spelling, and pronouncing,' afterwards reprinted, at least twice, under the title of 'A Dictionary of the English Language,' in which the whole Language is arranged according to its Terminations, &c. In 1781 appeared his 'Elements of Elocution,' which has gone through many editions. In 1783 he published a pamphlet, entitled 'Hints for Improvement in the Art of Eloquence,' and a small tract he afterwards incoporated in his 'Rhetorical Grammar,' first published in 1785, and since often reprinted, as well as his 'Academic Speaker,' and two or three other similar compilations. In 1797 he published a small tract, entitled 'The Melody of Speaking delineated, or Elocution taught, like Music, by visible Signs,' which is not much known. His 'Critical Pronouncing Dictionary, and Expositor of the English Language,' the work which had occupied most of his life, and upon which his reputation principally rests, first appeared in 1791. It has been eminently successful, having since gone through between twenty and thirty editions, and having superseded all other previous works of the same nature. In the preface of the latter edition he again his 'Key to the Classical Pronunciation of Greek and Latin Proper Names,' which was first published a few years after the Dictionary, and of which there are also many editions in a separate form. His last publication was his 'Outlines of English Grammar,' which appeared in 1805. Mr. Walker, who was brought up a Presbyterian, but became a Roman Catholic, and a very strict one, in his latter days, died 1st August, 1807, and was buried among his co-religionists in Old St. Pancras church-yard, London.

WALKER, REVEREND, is the author of a work entitled 'An Attempt towards recovering an Account of the Numbers and Sufferings of the Clergy of the Church of England, Heads of Colleges, Fellows, Scholars, &c., who were sequestered, harassed, &c. in the times of the late great Rebellion,' published in 1779. The Ninth Chapter (now the Second Volume) of Dr. Calamy's Abridgement of the Life of Mr. Baxter, together with an Examination of that Chapter, folio, London, 1714. It contains a long list of subscribers, is dedicated to 'The Archbishops, Bishops, and Clergy, now assembled, without Convocation,' and commences with a preface of above 90 pages, in which the author gives a very detailed account of his sources of information and the extensive researches he had made both in printed books and in public and private papers of the worth-while kind of two parts, the first in 204 pp., the second in 436.

On his title-page the author designates himself 'M.A., Rector of St. Mary's the More in Exeter, and sometime Fellow of Exeter College, in Oxford.' In Watt's 'Biography of the Bishops, Bishops, and Clergy, now assembled, without Convocation,' and there are attributes to him, besides the above-mentioned work, two single Sermons, both published in 1710, and 'Conscience Dissembled, in several Discourses on Acts xxiv. 16,' 8vo, 1723. But whether different writers be meant, or one and the same, there is a mistake in Salt's 'Biographical Dictionary.' Walker is stated to have been a native of Devonshire, to have been, after the publication of his work on the Sufferings of the Clergy, complimented by the university of Oxford with the honorary degree of D.D., and to have died at Exeter in 1720. This information professes to be given on the authority of the 'Biographia Britannica,' but there is no account of Walker, either in that work or in any of the other collections of English biography which we have had an opportunity of consulting.

Walker's 'Account of the Sufferings of the Clergy' has been severely attacked for its misstatements and exaggerations by Puritans and dissenting writers. It was republished after its first appearance by permission of the publisher, entitled 'The Church and Dissenters compared as to Persecution;' and also by the Rev. John Withers, a dissenting minister of Exeter. Several of its assertions are disputed by Neal, in various passages of his 'History of the Puritans;' and there is a great deal of股份 in the book as preserved in the third volume of that work, published in 1733, in which it is denounced as written 'with notorious partiality, and in language not fit for the lips of a clergyman, a scholar, or a Christian.' It must be admitted that Walker was a man of a coarse and violent temper, who could not be held responsible for any critical judgment, and with little learning or ability of any kind: he boasts indeed of his unusual ignorance of the history of the time to which his work relates when he undertook its compilation, as rather a qualification for the task which he undertook. It is true, and with a great deal of justice, it is said that he, partly from incompetency, partly from haste, he has set down many things upon the most insuffcient authority. His style is illeterate to the point of barbarism, and he contains particularly of the labours the position he held for writing for the other part of the work, after all deductions that may justly be made from the value of his book, it must be allowed to have preserved much curious information that in all probability would otherwise have been lost. It is true, that the number of the episcopal clergy who were imprisoned, banished, and sent a starving, to have amounted to seven or eight thousand.

WALKER, a genus of plants named after Richard Walker, D.D., who was founder of the botanical garden at Cambridge. It belongs to the natural order Oenocarpus.
and is known by possessing five petals, five stamens with ovate anthers; an obovately kidney-shaped fruit, which is a drupe; an inverted embryo with a hooked beak. There are two species of this genus known. *W. serrata* has serrate crenate leaves, racemes of flowers somewhat syrnbome, and the lobes in garden lanceolate. It is a native of Malabar and Ceylon, and has yellowish flowers and reddish fruit. The roots and leaves are very bitter, and are used in decoction by the inhabitants of Malabar as a tonic and anthelmintic. *W. integrifolia* is a native of French Guiana, and has entire leaves.

WALL. [Staffordshire.]

WALL, PICTS, ROMAN, &c. [Britannia; Northumberland.]

WALL-CRESS, the common name of the plants belonging to *Arabis*, an extensive genus in the natural order Cruciferae. Nearly seventy species of this genus have been described; they are mostly of small plants, fond of growing in dry stony places and on walls, and hence their English name—*Wall*. Their fruit is a linear siliqua, with flat 1-nerved seeds. The seeds are oval or orbicular, compressed in one row in each cell. The cotyledons are flat. The radical leaves are usually stalked, whilst those of the stem are sessile, or embrace the stem; they are entire or only rarely lobed. The petals are confluently covered with hairs, of which those on the stem are simple, whilst those on the leaves are bifid or trifid. The flowers are white in most instances, rarely red. Several of the species are natives of Great Britain, and many of them are indigenous to gardens. One species from rock-work and foot-paths, on account of their blooming early in spring.

*A. turrita*, Tower Wall-Cress, has leaves embracing the stem; the pods all on one side, recurved, flat, and lined with woolly hairs. This plant is a native of Europe, in Spain, France, Switzerland, and Italy. In Great Britain it appears to be almost an entirely academic plant, as the only localities mentioned are the walls of colleges at Oxford and Cambridge.

*Wallsia*, by Wall-Cress, has hairy toothed leaves, numerous straight pods, and the pedicels the length of the calyx. It is a native of middle and northern Europe, and also of North America, from Hudson's Bay to the Rocky Mountains. In Great Britain it is found in Sussex, Norfolk, and Suffolk, and also in Hampshire.

*A. rosea*, Rose-flowered Wall-Cress, has oblong, subcordate, half-stem-clasping leaves, covered with branched hairs; the pedicels longer than the calyx, and the stigma appressed. It is a native of California, and has rose-purple flowers.

*A. albidula*, White-leaved Wall-Cress, has toothed leaves, hoary or downy, with branched hairs. It is a native of Taurida and the Caucasus. It has large white flowers, and is a tufted plant, often cultivated in English gardens.

Several other species of the genus resemble these examples. They are of easy cultivation, and when once sown they will mostly propagate themselves.

WALL-FLOWER. [Cheiranthus.]

WALL-FLOWERS, the common name of the species of *Cheiranthus* of the natural order Cruciferae. This genus is known by possessing square or compressed siliques; a 2-lobed or capitulate stigma; a calyx bisaccate at the base; ovate compressed seeds in one series. The species are biennial or perennial herbs, or under-shrubs. The leaves are oblanceolate, lanceolate, entire, or toothed. The flowers are arranged in racemes, and are of various colours—yellow, white, purple, or parti-coloured. Many of the species exude a delicious colour, and are cultivated for their fine foliage in gardens. The most plentiful is the *Cheiranthus Cheiri*, the common Wall-flower, which has lanceolate entire leaves, which are either smooth or covered with 2-parted appressed hairs; linear pods and recurved lobes of the stigma. It is found wild throughout Europe, and in low places, and in among fens and meadows, amongst the ruins of old castles. On this account it is a great favourite with poets, and is popularly regarded as an emblem of faithfulness in adversity. The general colour is a brown-yellow, or, as a poet has called it, the 'yellow wall-flower stained with brown.' It is however subject to considerable varieties of colour even in its wild state, and these are much increased by cultivation. On account of its scent, it has been transferred from raised walls to the flower-borders of gardens, and there, by the doubling of its flowers and the variations of its colours, a number of distinct varieties have been recorded. The following is a list of the most remarkable varieties found in gardens:

- **a. flore simplici.** Single yellow.
- **b. flore pleno.** Double yellow.
- **γ. maximus.** Large-flowered yellow.
- **δ. gigas.** Large, saw-ledged. Double yellow, spreading.
- **ε. petulans.** Double rosy.
- **ζ. ferrugineus.** Double, variegated with purple and yellow.
- **η. flavescens.** Large, double, pale yellow.
- **θ. thyroides.** Bunch-flowered, yellow.
- **ι. gynanthus.** Flowers with anthers changed into carpels.
- **ν. hemiandrus.** Single and double, bloody-flowered.

The Wall-flower is a common wild plant in Great Britain. It possesses the slight acridity of the order to which it belongs. The flowers are in racemes, and may be propagated by cuttings, which soon strike root when planted in a bed of sand and peat. Of the various species in this genus none are more suited to the purposes of the gardener than the Wall-flower, *Cheiranthus*.

A number of other plants deserve the name of wall-flowers, as they are found growing on old walls; the most common of these are the Reseda luteola, some of the species of Antirrhinum, the Asplenium ruta maris, and the various *Donum*'s Wall-Cress, the Arabis, and the *Pranthere.*

WALL-PELLITORY. [Wall-Pellitory, the Arabis, Wall-Cress, the Pranthere, &c.]

WALL-PELLITORY, the common name of the *Parietaria officinalis*, a plant belonging to the natural order Urticaeae. The genus *Parietaria* has several species. One of them, given the name *Parietaria officinalis*, is distinguished by having a quadrifid inferior perianth; stamens with incurved filaments, and a one-seeded fruit inclosed in the enlarged perianth.

The *P. officinalis*, Wall-Pellitory, or Pellitory of the Wall, grows in lanceolate 3-lobed leaves, and the flowers in two portions, each of about 7 segments; in each portion are 3 flowers, with one fertile one between them. This plant is the same as the *P. erecta* and *dissecta* of German botanists. It is common throughout Europe in rocky places, and is found only in England, where it is a weed of gardens and waste places amongst rubbish. The stems of the plant are often procumbent upon the wall on which it grows, and are of a reddish colour. The flowers are small, hairy, a purplish green colour, and clustered in the axils of the leaves. The leaves are finely fringed along the borders, which under some circumstances have a stinging power, similar to many plants of the order to which they belong. The filaments of the stamens are jointed, and possess a remarkable physiologic property; the flower first opens, the filaments are found bent over the stigma; but when the time has arrived for the anther to shed its pollen, the filament flies back from the stigma with considerable force, and entirely empties the pollen-case of its pollen by jerking. The same plant has been found when the sun first shines on the opened flower; but it may be easily effected artificially by touching the anther with the point of a pin or other instrument. This phenomenon was first observed by Caspar Bauhin, in 1600, and a full account of the situation of the flowers of this plant is given in Curtis's *Flora Londinensis*. The wall-pellitory was at one time admitted into the Materia Medica of the London and Edinburgh Pharmacopoeias, but it is now abolished. It was recommended as a diuretic in diseases of the kidneys, and also as a purifier of the blood in cutaneous diseases.

Farmers are in the habit of placing a bunch of this plant on corn affected with weevils, which, it is said, quickly drives away.

WALLACE, Sir William. The life and exploits of this most popular national hero of the Scots have been...
principally preserved in a legendary form by poetry and tradition, and are only to a very small extent matter of contemporary record or illustrated by authentic documents. There is no extant Scottish chronicle of the age of Wallace. Fordun, the earliest commentator, is silent, and the most trustworthy of the chroniclers, man in whose account of the life of the one bat upon and to one of his early contemporaries, is by the next author, still half a century later. His chief character is the metrical writer Blind Harry, or Harry the Minstrel [Vol. xii., p. 56], whose work contains an account of the commencement of Wallace's career as a hero, and whose extant at any rate is supposed to be nearly two centuries subsequent to that of his chief. Some few facts however may be got out of the English annalists Trivet and Hemingford, who were the contemporaries of Wallace.

There are contradictory statements of the year of his birth, but it is probable that he was born about 1270. His family was one of some distinction, and he is said to have been the younger of the two sons of Sir Malcolm Wallace. Fordun, who held the office of steward of Ayrshire, in the neighbourhood of Paisley. His mother, who, according to one account was Sir Malcolm's second wife, is stated by the genealogists to have been Margaret, daughter of Sir Raynald or Reginald (other authorities say Sir Hugh) Crawford, who held the office of sheriff of Ayrshire. The history of Wallace down to the year 1297 is entirely legendary, and only to be found in the rhymes of Harry the Minstrel; though many of the facts which Harry relates also still live as popular traditions in the country, where Wallace was born and brought up. It has been handed down in that way from the time when they happened, or only derived from his poem, which long continued to be the chief literary favourite of the Scottish peasantry. Harry, who, it may be observed, professes to translate from a Latin account written by Wallace's intimate friend and chaplain, John Blair, makes him to have been carefully educated by his uncle, a wealthy churchman, who resided at Dunipace, in Stirlingshire, and to have been afterwards sent to the grammar-school of Dundee, where he was taught the liberal arts. He is said to have been performed, his slaughter of the son of Selby, the English governor of the castle of Dundee, in chastisement of an insult offered him by the unwary young man: Wallace struck him dead with his dagger on the spot. His father, it is said, after Edward I. of England had obtained possession of all the places of strength throughout Scotland on his recognition as Lord Paramount by the various competitors for the crown, which had become vacant by the death of the infant Margaret, the Maid of Norway, in September, 1290.

This bold deed committed by Wallace, who in making his escape is asserted to have laid several of young Selby's attendants as low as their master, was immediately followed by a second exploit. Wallace, who is asserted in this life to have been eloquence, sagacity, and other high mental powers and accomplishments (to this the testimony of Fordun is as express and explicit as that of his poetical biographer), not less than with strength and height of frame was also noted for his courage. He discharged from the head of a band of attached as well as determined followers, who under his guidance often harassed their natural enemies the English soldiery, both on their marches and in their stations, plundering and ravaging, as might elsewhere be the case. Particular spots in nearly every part of Scotland are still famous for some deed of Wallace and his fellow-outlaws performed at this period of his life; but for these we must refer to the Blind Minstrel. The world is full of stories about the height of the wall which was said to have been his chief haunt; and some of his most remarkable feats of valour were exhibited in that town, in the face and defiance of the foreign garrison by which it was occupied. Both his father and his elder brother are said to have been murdered in the city by the English, and their chiefs. It was now also that he fell in love with the orphan daughter of Sir Haw de Bradfute, the heiress of Lumington, being, it is said, first seen her at a church in the neighbourhood of Lanark. The Scotch writers affirm that the lady, whom he appears to have married, and who was in reality but a daughter, a year or two after gaining her connection with Wallace fell into the hands of his enemies, and was barbarously executed by order of Hadingen, the English sheriff or governor of Lanark, while her husband, or lover, was deemed to witness the spectacle from a place where he lay in concealment. Such private injuries were well fitted to raise his public hatred to an unextinguishable flame.

How far the guerrilla warfare maintained by Wallace and his associates contributed to excite and spread the spirit of resistance to the English government, we have scarcely the means of judging; but it seems probable that it aided materially in producing the general insurrection which broke out in the spring of 1297. The accounts we have of the movement are derived in part from the traditions incorporated at its head, in command of a considerable force, and in association with some of the most distinguished persons in the kingdom, such as the Stewart of Scotland and his brother, Wishart, bishop of Glasgow, Sir William Douglas, &c. After he was made prisoner (afterwards King Robert I.), who had hitherto, as well as his father, still alive (the son of the original competitor for the crown), professed to adhere to the English king.

This however appears to have been but an ill-considered confederacy. When the force dispatched by Edward to quell the revolt presented itself before the Scottish army posted near Irvine, in Ayrshire, the leaders of the latter, throwing off the authority of their nominal chief, could no more agree what to do than whom to obey; and the stock of that Sir Henry, or Sir Andrew, Stewart, and his companions, was supposed to be quite gone, availing themselves of the diplomatic talents of the Bishop of Glasgow, concluded a treaty on the 9th of July, by which they agreed to acknowledge Edward as their sovereign lord. All the rest ultimately succumbed to this armistice, except Wallace, who was conveyed to London, and held by Monravay of Bothwell. The treaty of Irvine, which is printed by Rymer, and, we believe, the first of the few public documents in which mention is made of Wallace: to the English, was expressed in these words, 'Ecclesiæ Sire Wallææ; ' the meaning of which Lord Hailes conceives to be, 'that the barons had notified to Wallace that they had made terms of accommodation for themselves and their party.' The words moreover, on the condition that they refer to Wallace, of which there can be little doubt, show that he had before this date obtained the honour of knighthood. It had probably been bestowed upon him (as was then customary) by some other knight, one of his companions in arms, since his elevation from being the captain of a body of ruffians to be the commander-in-chief of the national forces.

Wallace now retired to the north, carrying with him however a considerable body of adherents, to whom additional numbers rapidly gathered, so that he soon found himself in a condition to resist the movements of the English. Directing his force on the north-eastern coast, he surprised the castle of Dunottar, cleared Aberdeen, Forfar, Breechan, and other towns of their English garrisons, and then laid siege to the castle of Dundee. He had already, it seems, brought that the English army was approaching Stirling; upon which, leaving the siege to be carried on by the citizens of Dundee, he hastened to meet the enemy in the field. The result was the complete defeat and rout of the English at the battle of Stirling Bridge, fought on the 11th of September, 1297—a battle which once more, for the moment, liberated Scotland. The English were immediately driven or fled from every place of strength in the country, including Berwick itself.

Availing himself of this panic, and of the exhalation of his countrymen, Wallace even pursued the fugitives across the border; and putting himself at the head of a numerous force, he entered England on the 18th of October, and reduced the country with fire and sword from sea to sea, and as far south as to the walls of Newcastle. It was during this visitation that the prior and convent of Hexham obtained from him the protection of Henry II. it was at Hexham [Haxham 7th of November, and runs in the names of Andreas de Moravia, et Willelmu Wallacici, deces exercitus Scottiae, nomine praecellentis Principis Dei gratia, Regis Scottiae illustrissimi, tali regni ajudicio, in quibus Anderson Moray and Wallace, commandam-in-chief of the army of the name of King John, and by consent of the name of the said kingdom. The home he was the King of Scotland was Balliol now in the stately plaine and living in a sea at a behest in the hands of Wallace's associate in the command of the army.
Andrew Moray, son of his faithful friend of that name who had retired with him from the capitulation of Irvine, and who had fallen at the battle of Stirling Bridge.

One of the most curious of the few public papers in which the name of Wallace is mentioned, has only been recently discovered, by Dr. Lapenburg of Hamburg, in the archives of the ancient Hanseatic city of Lübeck. It is a letter, in Latin, addressed to the authorities of Lübeck and Hamburg, informing them that their merchants should now have all the ports of the kingdom of Scotland, seeing that the said kingdom, by the favour of God, had been recovered by war from the power of the English. The letter is dated 'Apud Badingstonam [the true word, it has been suggested, is probably Haddingston], the 11th day of August, 1297,' that is, the assumption of Cumberland and Northumberland. It is in the name of 'Andreas de Moravia et Willelmus Wallensis, duces exercitus regni Scottiae, et communis scidem regni—liber parens Principatus et Dominus de Moravia et Willelmus Wallensis, et communis scidem regni—libertatem et amicitiam, &c.'

The discovery was first announced, not quite accurately, in the 'Foreign Quarterly Review' for August, 1829; and the letter was, we believe, first printed in the Appendix to 'The Life of Sir William Wallace, by John F. Cooper,' London, 1829, pp. 544, 545, in that year.

After his triumphant return from his invasion into England, Wallace assumed the title of Guardian of the Kingdom in the name of King John, whether formally invested with that dignity, or only hailed as such by the gratitude of his fellow-countrymen, as a charter, a diploma, conferring the constabulary of Dundece on Alexander Skirmishur [Scrimgeour] and his heirs, and dated at Torphichen (in the county of Linlithgow) the 28th of March, 1298, he styles himself, "Willelmus Walays miles, Ordinarius, vescendi et durandi usque ad domi praeclaris principis Domini Johannis, de grauit Regis Scottiae illustres, de consensu communis ejusdem Judicis.'

The grant is stated to have been made with the consent and approbation of the nobility ('per consensum et assentium magni dicti regni').

But this supreme elevation did not last long. Supported only by his own merits and the admiration and adhesion of his fellow-countrymen, Wallace, a new man, and without a family connection, would probably have found it difficult or impossible to retain his high place, even if he had had nothing more to contend with than domestic jealousy and dissatisfaction. Fordun relates that many of the nobility were in the habit of saying: 'We will not have this man to rule over us.' Meanwhile, the English king, who had been abroad when the defeat at Stirling Bridge lost him Scotland, had now returned, and was already on his march towards the borders, at the head of a large army. A body of English, who had landed in the north of Fife, led by one de Valois, Earl of Pembrokeshire, is said by the Scottish authorities to have been attacked and routed by Wallace on the 12th of June, 1298, in the forest of Blackcounside, in that county; but obliged once more to submit to an attack at Sighthill, in the neighbourhood of Falkirk—the Scots commanded by Wallace, the English by their king in person—the former, after a gallant and obstinate resistance, were at last forced to give way, and the battle ended in a universal rout accompanied with immense slaughter.

This defeat did not put an end to the war; but it was taken advantage of by the Scottish nobility to deprive Wallace of his merits of guardian or chief governor of the kingdom. The Scottish accounts say that he voluntarily resigned the supreme power; but it appears certain, at any rate, that Bruce, his rival Comyn, and Lambert, bishop of St. Andrews, were now appointed joint guardians of Scotland, still in the name of Baliol. For some years after this our melancholy hero was slighted or obscure; but he was not content to have remained a private citizen in Fenchurch Street: on the next day, being the eve of St. Bartholomew, he was brought on horseback to Westminster, and in the hall there, 'being placed on the south bench,' says Slow, 'he was crowned with laurel, for the English king did say to him, "You right to bear a crown in that hall,"' he was arrayed as a traitor, and on that charge found guilty, and condemned to death. After being dragged to the usual place of execution—the Elms in West Smithfield—at the stroke of noon, he was there hanged, drawn and quartered, on the 23rd of August, 1303. After which, his bowels having been taken out while he yet breathed, and burnt before his face, his head was struck off, and his body hacked into quarters. His right arm was set up at Newcastle, his left at York, his right thigh at Derby, his crown and his head on London Bridge. Wallace's daughter by the heiress of Lamington married Sir William Baillie of Hoprig, whose descendants through her inherited the estate of Lamington.

The CARPATHIAN, or WALACHIA, or WALACHIA (Zira Rumunia, in Wallachian), is a principality and a vassal state of Turkey, or more correctly of Turkey and Russia. Its limits are, on the north the Carpathians and the principalities of Moldavia; on the east that part of the Rumanian province of Transylvania, which is between the Danube, and on the west the Danube and the south-eastern corner of Hungary. Its greatest length from west to east is 276 miles, and its greatest breadth from south to north is 200 miles; the extreme miles of 60 to a degree of latitude, or 26,649 English square miles; the population is 970,000, according to the same authority.

The Carpathians are the principal mountains. Several ranges of lower mountains and hills stretch from the Carpathians in a parallel direction south and south-east, and contain valleys between them, the upper part of which is narrow, but the lower part becomes wider as the valleys approach the Danube. Above the confluen of the rivers near the Danube of lowlands and marshes, which are exposed to the inundations of the river. However the most western part of Wallachia is generally mountainous, and the hills reach to the banks of the Danube. A great part of the northern part of Wallachia is covered with forests of firs, oaks, and beeches. The soil, except in the mountainous districts, is a rich mould, and of extraordinary fertility. In the elevated part of the country the thick forest is mostly extinguished, and great numbers of deer and wild hogs frequent the mountains, which feed a great number of sheep, the flesh of which is as much esteemed as that of the sheep of Transylvania. In the level and marshy parts there is excellent pasture for cattle, of which great numbers are annually fattened. The principal river is the Danube. [Danube.] The other rivers are tributaries of the Danube; their sources are all in the Carpathians, and their direction is south in the western.
part of the country, south-east in the middle part, and east in the eastern part. The principal are—1, the Syl or Sis, which comes from the Tatra Mts., enters at Arjish, and

enters this country by a long and narrow defile called the 

Valkan Pass, where it enters Wallachia; it joins the 

Danube opposite the small town of Rahoza in Bulgaria; 

its length is nearly 140 miles. 2. The Alt or Aluta, east 

of the Arjish, above the town of Arjish, is the common 

source of several rivers and is about 140 miles long. The 

sources are in 45° N. lat., between the Alt and the river 

Arjish, at the foot of the Carpathians; it joins the 

Danube opposite the town of Novgorod in Bulgaria, after a 

course of 108 miles. 3. The Zarkam, a tributary of the Alt, 
a river of 162 miles, joins the Danube between the town of 

Pass, and the Arjish, after an eastern course of 120 miles. All 

these rivers are in the Carpathians, 20 miles east of the 

Drothehurn Pass, and it joins the Danube opposite the 

Bulgarian town of Turtuki, after a south-eastern course of 

100 miles. The Dumbrowitza is a tributary of the Arjish, 

which it joins 16 miles north of the junction of the Arjish 

with the Danube; its course is in the south-west parallel to the 

Arjish, and its length is 110 miles. 5. The Janoltz or 

Yandelon comes from the Carpathians near the Tomosh Pass; 
at first it runs south for 30 miles, and afterwards south-east, 

crosses, and north-east till it reaches the Danube a little below 

Hirzewa; its whole course is nearly 170 miles. 6. The 

Buza, north of the Janoltz, comes from Transylvania, 

flows through the pass of Boszu or Buza, and joins the 

Sereth 12 miles above the junction of this river with the 

Danube, after anastern course of 120 miles. All these 

rivers are in the Carpathians, 20 miles east of the 

Danube, and in the rainy season, or when the snow on the 

Carpathians melts, the low tracts along the Danube are 
inundated for many miles in breadth.

Climate and Productions.—The summers are exceeding 

hot, but the climate is healthy, except in the marshes, where bilious fevers 

prevail during the warmer months. The temperature is much 

colder in Transylvania and Moldavia. The waters 

are abundantly supplied with fish; the trout in the 

streams and the Danube are highly esteemed, and 

the navigation, which is rendered impracticable in 

many places by rocks, shallows, and other obstacles. 

Besides the larger rivers, there are many smaller streams 

which traverse the country. In the marshy districts there 

are lakes, some of which are considerable. 

The vine grows well, and the produce is 

amount, and would be equal to the best Hungarian wines 

if the inhabitants had more skill. The 'Rhamnus' 

viticus' yields annually 600,000 oaks (a little more than a pound 

and a half, the sixth part of the oka of Coafantimile) 

of red, which goes chiefly to Transylvania, where it is used 

for dyeing cloth, and especially twist. In the time of 

Wilkinson, about twenty years ago, there were about 2,500,000 

sheep in Wallachia, and gave a supply of wool, which, 

of which about 1,760,000 oaks were annually 

exported. There are three different kinds of sheep, 

producing three different sorts of wool: Zigay, which is 

short and very fine; Zarharm, which is long and coarse; 

and Tartar, which is intermediate. The Zarharm 

covers a little so short and fine as the Zigay. There 

is abundance of game of every description: 300,000 hare- 

skins are yearly exported. There is plenty of timber, but 

it is not in the forests. Only the third part of the country is 

cultivated, a consequence of the system of extortion and 

oppression which formerly prevailed in Wallachia. One 

third of all the lands belong to the clergy. The commerce 

was in former times entirely in the hands of the Jews and 

Armenians, and was of little importance, but it has con-

siderably increased during the last thirteen years. The line 

of steamers established between Vienna and Constantinople 

has put Wallachia in direct communication with both 

these capitals. Several English, German, and French 

merchants reside at Bucharest, and the Bar 

Government.—The government is in every respect like 

that of Moldavia, from which country the political history 

of Wallachia is inseparable. [Moldavia.]

Towns.—Bucharest, or more correctly Bucharesti (Buc- 

aresti)—Tergoviast, for more correctly Tergoviast, north-west of Bucharest, was the capital of 

Wallachia till 1698, when the seat of government 

was transferred to Bucharest. Tergovist is situated on the Jalo-

nitsa, and contains about 5000 inhabitants; the whole 

town is covered with ruins of houses and palaces, which 

were abandoned by the nobility after 1698. The road from 

Bucharest to Kronstadt in Transylvania, leads through 

Tergovist. Ghinargewo, on the Danube, opposite Rushtuk, 

was formerly a strong fortress, but the fortifications were 

altered in consequence of the mentioned Turkish 

seat of a bishop, is a small town. Ardisch or Arjish, on the 

Arjish river, towards its source, lies on the road from 

Bucharest to the pass of Rothenhurn and Hermannstadt. 

There is a beautiful church in this thriving little town, 

which is said to be the seat of Wallachia. It is a small 

but busy town, a little west of the junction of the 

Aluta with the Danube. Krajova or Krayova, a fine town 

with about 8000 inhabitants, has considerable commerce; 

it is situated on the Sty, in the centre of Little Wallachia, 

and is the western point of the line of communication 

with the north, east, and Hungary and the Danube on the west. 

Krajova is generally called the capital of Little Wallachia. 

Brajow, on the Danube, ten miles south of the junction of 

the Arjish with the Danube, in the north-eastern corner 

of Wallachia, was the capital of Peter, one of the 

Danube; but its fortifications have been (or are to be) 

razed, pursuant to the terms of the peace of 1829. It is 

also called Braila. The town sustained many sieges against 

the Russians, who have taken it several times. Rimmik, 

which must not be confounded with Rimmik, in Moldavia, 

lies west of Brailow. In its vicinity is Okna-Mare, where 

there are rich mines of rock-salt. The great road from 

Yassy to Bucharest leads through Rimmik. Fokshan, or Fokszan, 

is partly in Moldavia. [Moldavia, p. 304.] The southern 

larger part is called Little Wallachia. Inhabitants.—The majority of the inhabitants are Wallachians, besides whom there are 50,000 (?) gypsies, 20,000 Jews, 5000 (?) Armenians, and 3000 Greeks.

Origin and History of Wallachia.—The Wallachians 

are not confined to Wallachia; they inhabit Moldavia 

and parts of south-western Russia; they are very 

numerous in Transylvania and eastern Hungary; they form 

part of the population of the Bukowina, and they are 

very numerous in Transylvania. They are fair, and 

Euprates. Their number has been estimated at three 

millions; but this estimate is rather low, and apparently does 

not comprehend the Wallachians of Macedonia and the adjacent 

countries, or the Kutscho-Wallachians, who form a very considerable part of 

the population of that part of the country. As the 

Wallachian language is apparently derived from that of 

the Thracians, it is generally supposed that the Wallachians are the 

descendants of the Roman colonists sent by Trajan into Dacia. But this is 

a mere hypothesis, and some well ascertained facts show that this opinion cannot be maintained.

It is true that after Trajan's time the Latin language 

made considerable progress in Dacia, but it is also true that 

the emperor Aurelian, when he ceded Dacia to the 

Goths, recalled the Roman provinciates (provinciales) from 

Dacia and gave them back to the Roman nation, the people of 

Vopiscus (Aurelianus, c. 39). There is not the slightest 

trace of a Roman population having lived in Dacia during 

the next eight centuries after Aurelian, and the name 

Wallachians is unknown in the history of Dacia during that 

time. But the Thracians, Macedonia, and Thessaly, though not before 

the ninth century, as we know from the Byzantine historians, who 

frequently mention the Vlachi (Bàgya), who lived chiefly 

in the country round Mount Pindus. In the twelfth 

century a remarkable species of the Vlachi, who were 

called by the name of Vlachs, by the Emperor Manuel, concluded an alliance with the Bulgarians and the 

Cumanians, who inhabited Bulgaria and Dacia, and, commanded 

by two brothers, Asan and Peter, left Thrace and settled 

north of the Danube. In the beginning of the thirteenth 

century the inhabitants of Dacia were exterminated by the 

Mongols; and after the Mongols had withdrawn, num-

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born of foreign colonists, Bohemians, Moravians, Germans, and especially Wallachians, flocking, some to Transylvania, and others to the present countries of Moldavia and Wallachia, which thus received a new population. Sulzer states that the MS chronicles of the Wallachians contain very good accounts of these migrations, which we also find mentioned in the Annales of Hungary and Transylvania, and it is always said that these Wallachians received certain lands to settle upon. It is in a document concerning a donation which King Bela IV. of Hungary made to the Knights of St. John, in the year 1231, that the names of the Wallachians first appear in the history of Hungary. These Wallachians were boiers, and lived in Transylvania. Three causes seem to have contributed to induce the Vlachi to settle north of the Danube—the origin of the Greeks, emperors and nobles, the invasion of the Turks, and the opportunity of acquiring fertile lands and liberty in a country beyond the reach of the emperors and the Turks. Thus the inhabitants of Wallachia, Moldavia, and a great part of Transylvania and Hungary might be considered as descendants of the ancient Thracian nation, belonging to the Greek church, and who used a kind of Roman language, as we still see from the Kutzio-Wallachians. That this Roman language was used in a considerable part of the Thracian peninsula is stated by the Greek historian, Duque de Benavente, who says that after the conquest of Macedonia by the Bulgarians, that is, in the twelfth century, these barbarians proceeded to the conquest of the Provinsia Latinorum which then temperate Romans vocabantur, modo vero Moraviach, hoc est Niger Latinorum vocantur. It is also considered that the Wallachians are Greek Christians, but that no facts are known in ecclesiastical history from which we can conclude that the Greek religion was introduced into Wallachia by missionaries, as was the case in Russia. This circumstance however does not exist, when the Wallachians and their present country, they were already Greek Christians, and did not require missionaries. In short, the hypothesis that the Wallachians are the descendants of the Roman colonists in Dacia appears to be as untenable as the opinion according to which the Greeks in Transylvania are the descendants of the Goths. However the fact that the Wallachians are descended partly from the Romans is proved by their language and their name.

Most Wallachians call themselves Rumanian or Roman. As the name Wallachians, which is given them by foreigners, several hypotheses have been proposed. The name is said to be derived from Wloch, a Servian word signifying 'a shepherd,' or from the Voloch, a Turkish name of the Danubian basin in Russia. It is however that the word Wallach comes from the Slavonic Wzech (with a barred i), which among the Poles, the Servians, and other Slavonic nations still signifies an Italian, or a Roman, and seems to be the same as the German Wallach, which signifies a foreigner. It follows, that for the Romans, either a French or an Italian, though its original meaning was rather a 'foreigner.' It cannot surprise us that the name of Blachi or Vlachi was given to these Romans before they emigrated to the north. From the seventeenth century, even earlier, a great part of Thrace, Macedonia, Thessaly, Epirus, and Greece was occupied by Slavonic nations which mixed with the primitive Greek inhabitants, or in other parts with the Romanized nations. Hence the origin of the Wallachian language.

The language. According to Thurneysen, who has written half of all the Wallachian words are Latin, and of the remaining half three-eighths are Greek, two-eighths Gothic, Slavonic, or Turkish, and three-eighths belong to a language which seems to be mixed. The suffixes, the pronouns, the greater part of the prepositions, and the adverbs of place and time, as well as the numerals, the declensions, and the conjugations, are all Latin, and so is generally the groundwork of the language. The declension of the Nominative is (1) Sing. Nom. kîny; Dat. kînî; Acc. pe or pre kînî; Voc. kînî; Ablat. de la kînî: Plur. Nom. kînî; Gen. a kînîlor; Dat. kîinîlor; Acc. pe or pre kînî; Voc. kînî; Ablat. de la kînî (2) Sing. Nom. dûmûna (the mistress); Gen. a dûmûnîlor; Dat. dûmûnîlor; Acc. pe or pre dûmûnî; Voc. dûmûnî; Ablat. de la dûmûnî: Plur. Nom. dûmûnîlor; Gen. a dûmûnîlor; Dat. dûmûnîlor; Acc. pe or pre dûmûnî; Voc. dûmûnî; Ablat. de la dûmûnî. The auxiliary verb fi or fire (to be) goes thus:—Pres. Ind. Yeu sun; Inle, yestî, noo sunîn, wee sundî, yeu sundî; Conj. fi, fi.
mathematician and a famous astrologer. He continued his studies at Pavia and Bologna, where Argoli, the astronomer, taught him the principles of the Cabala. Besides the Cabala and astrology, Albrecht acquired a thorough knowledge of the antient and almost all European languages; of the Roman, the canon, and the German law; and of mathematics and other sciences connected with the military art, which was always the chief object of his study. He was more than twenty years a student at the university of Altdorf, where he signalized himself by many extravagances, if we may trust the stories with which credulous contemporaries or later generations have disfigured the memory of the most lofty genius of his time. Albrecht had hoped to see his name become illustrious, but Waldstein believed it. He always believed in astrology, and in later years the astrologer Seni was one of his principal counsellors.

Anxious to signalize himself by military deeds, Waldstein, in 1605 went to Hungary, where the imperial armies were fighting against the Turks. At the siege of Gran he was amongst the foremost stormers, and his commander-in-chief, General Basta, appointed him captain on the walls of the conquered fortress. After the peace of Sitterau, in 1606, he married an old but wealthy widow, Lucretia Nikessin, baroness of Landeck, who died in 1614, and left him fourteen large estates in Moravia. During his marriage, and till 1617, Waldstein devoted himself exclusively to the management of his family concerns, a double farmer; he increased his wealth by economy; and he disposed of large sums in the banking-houses of the Fugger and Welser, at Augsburg, who were then the richest mercantile houses in Europe. He was also a patron of the emperor's goons, with which he assisted the archduke Ferdinand of Austria, duke of Styria, who was at war with the Venetians; he saved the festival of Gradicia, which was hard pressed by the Venetians; and by paying his soldiers well, and keeping open tables, he became the idol of the Styrian army. In a short time he saw himself at the head of several thousand men, and, after the campaign was finished, towards the end of 1617, to the advantage of the archduke Ferdinand, the emperor Matthias made him his chamberlain and colonel in chief. Immediately afterwards he married Isabella Catharia, the daughter of count Harrach, who was the favourite of the emperor, who, on this occasion, conferred upon Waldstein the dignity of a count of the Holy Roman Empire. The state he in 1618 appointed him colonel of the Bohemian and Moravian militia; and at the outbreak of the war between the Bohemians and the emperor, the Bohemians offered him an independent command in their armies. The Protestant members of the family of Waldstein were partly assisted and partly injured by the emperor, who showed much less from religious than from political motives, refused to make common cause with the Bohemians, in consequence of which the Moravian states deprived him of his command of the militia, and confiscated his estates. Waldstein sided the emperor, and having been created a count of Bohemia, was created count of Italy. He immediately took the field, and with Frederic von Cal- latine, who had been chosen king by the Bohemians. The counts Mansfeld and Thurn having advanced as far as the neighbourhood of Vienna, and attacked the imperial general Boucquet, near Tulln (1618), he hastened in the assistance of Boucquet, defeated the enemy, and thus saved the emperor from being made a captive in his own capital. In the battle on the Weisses Berg, near Prague (5th of November, 1620), the cavalry of Waldstein, on being charged, held their ground. Through these charges, but Waldstein was not present at the battle, being obliged by his commission as quartermaster-general to procure the necessary supplies for the imperial army. It seems that, the resources of the emperor being exhausted, Waldstein gave large sums for the support of his master, for which however he got an ample indemnification. After the overthrow of king Frederic of Bohemia, the estates of his adherents were confiscated, and the greater part were either sold by the emperor Ferdinand II. or given as rewards to his faithful servants; on many occasions also Ferdinand used to combine generosity and in- terest by selling them at a low price. The reward of Waldstein was the lordship of Friedland, worth about 600,000 guilden, for which he paid 150,000 guilden; and he bought more than sixt, other lordships and estates, the value of which was estimated, at a very low rate, at 7,290,228 guilden, of which however Waldstein only paid a part, his sacrifices and services being taken into account. As the value of money was then at least three times less than to-day, the amount of the property acquired by Waldstein in consequence of his services, was at least 24,000,000 guilden (3,000,000,000) according to the present value of money; to which must be added the value of his personal estate.

Waldstein retired by his triumph nor by his wealth. In 1621 he took the field against Betten Gabor, the prince of Transylvania, who stood on the frontiers of Germany, and was going to effect a junction with John George, marquess of Brandenburg-Jagarndorf, who had encamped near the town of Bulgnitz, within the frontiers of the then province of Silesia. Waldstein successively defeated both his adversaries, prevented their junction, and forced Betten Gabor to sue for peace, which was granted on condition that he should give up his claim to the crown of Bohemia, which he had acquired by the death of Sigismund of Brandenburg. Waldstein was principally occupied with the management of his estates. But Betten Gabor having again taken up arms against the emperor, Waldstein hastened to Hungary, and arrived just in time to save the imperial army under the direction of the emperor Charles, of which he was one of the generals. He distinguished himself in the battle of Giiding, on the frontiers of Moravia, by the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giiding, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giiding, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giiding, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giarging, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giargin, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giargin, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giargin, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giargin, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giargin, and the prince of Transylvania, count Thurn, and John George of Brandenburg-Jagarndorf. As a reward for this victory, the emperor, in 1624, created him the baron of Giargin, and the prince of Transylvania, count Thurn, and John George of Branden
put in motion by the power of his genius, this heavy body advanced with irresistible rapidity. On the 21st of August Waldstein was at Cottbus; on the 27th at Havelberg; and on the 30th he took Dömitz in Mecklenburg, after having performed a march of 250 miles in eight days, through a marshy ground on which it would be difficult to perform for a modern army unaccompanied by heavy ordnance and moving on excellent roads. On the 27th of September, his lieutenant, count Schlick, defeated the Danes near Aalborg in Jütland, and king Christian saved the remnants by flying with his troops and coming into the Danish islands. Waldstein hastened to the Belt, and it is said that, being unable to cross this channel for want of ships, in a fit of anger he ordered the sea to be bombarded with red-hot bullets. This war was finished by the peace of Lübeck (12th of May, 1629). Waldstein’s reward were the duchies of Mecklenburg, with which he was invested by the emperor on the 16th of June, 1629, after the dukes Adolphus Frederick and John Albert had been dissolved in them, for felony, in an imperial decree in 1628. Waldstein choose Wismar, the best port for a navy on the southern coast of the Baltic, for his residence, and obtained from the emperor the title of Admiral of the Baltic and the Queen’s Lieutenant in the German shipping. The Swedes have charged him with childish vanity. His plan was to form a navy with the assistance of the Hanseatic towns, and to prevent Gustavus Adolphus, the king of Sweden, from choosing Germany for the theatre of his ambition. The emperor of Germany was determined that the Swedes should have penetrated the secret views of that king. ‘Bitt,’ wrote he to his lieutenant Armín, ‘der Herr hab fleissig Aufsicht auf den Schonen, denn er ist ein gefährlicher Gist’ (‘I beg you, sir, to observe well the Swede, for he is a dangerous fellow, for he is a very unscrupulous merchant, and to have him under his dominion and subject to him’). ‘I should like to have the Swede for my friend, but that he should not be too strong, for love and power cannot agree.’ At a moment when his funds were almost exhausted, the ordinance of the king had fixed the annual cost of dollars to be raised immediately, which he intended to give as a reward to a certain merchant who was to do something in Sweden. It has been pretended that Waldstein had formed the plan of murdering Gustavus Adolphus, but in the summer of that year it is certain, and it is said that the merchant had proposed to turn the Swedish fleet in Karlskrona. The plan was not put into execution. During the siege of Stralsund, Waldstein cried out that he would have the town if it were fastened to the sky with iron chains. Such was his power and influence on the king, that he could have made himself a powerful member of the Ligue, by the extraordinary success of the imperial arms, the power and influence of the Ligue, of which Maximilian was the head, had become secondary. Tilly hated Waldstein as his greatest rival. The pride of the princes of the empire was hurt by the elevation which, though a Bohemian, was given to Waldstein as a reward of meritorious service. The emperor was only too pleased to make the Swede king’s lieutenant, and to give him the title of Admiral of the Baltic. Waldstein was a great Indian. His character was that of a bigoted Jesuit, avaricious, and ambitious of injurious use to his religion, a traitor to his country, and a traitor to his king. He was ambitious of the office of generalissimo, and he would not have been satisfied with the command he held. The emperor was the more ready to believe the accusation, as it transpired that France had offered to assist Waldstein to aid him in obtaining the crown of Bohemia; but Waldstein rejected these propositions, and continued to carry on his war against Germany, enemies as well as friends. The emperor ordered him to withdraw from Bohemia and Moravia, and to take up his winter-quarters in Lower Saxony (December, 1632). At this Waldstein neither would nor could obey this order, which he regarded as a violation of the conditions on which he
had resumed the command. Upon this Maximilian of Bavaria urged the emperor to dismiss his disobedient general. Waldstein, having been informed that the emperor had resolved to do it decided on the very morning of the 23rd of January, 1636, to resign his command. His faithful lieutenants urged him not to abandon them, for they were all creditors of the emperor, who paid them very irregularly, and they were sure they could make more money on the estates of Waldstein than they could on the estates of their commander should resign. In order to prove their invariable attachment, they signed a declaration at Pilsen, on the 12th of January, 1634, in which they promised to stay with Waldstein as long as he would be their commander. This is the oath of faith, and the Catholics, and The Hapsburgs at this time, and among the Protestant princes the wealth of the Waldstein estates had been appropriated to the fiscus. It has lately been reported that the present emperor, Ferdinand I., without waiting for the legal decision, has ordered those estates to be resold to Whigs, who would value them highly.

WALLER, SIR WILLIAM, a distinguished military commander on the side of the parliament in the civil wars of the seventeenth century, was of the same family of the Wallers of Spensiburth, in Kent, from which the poet Waller was descended, and was born in 1626. After finishing his studies for a time at Magdalen-hall and Hall-hall, Oxford, he went to complete his education at Paris; and while abroad he entered the service of the confederated powers (Sweden, Holland, and the Protestant princes of Germany) in the war which had carried on against the emperor after their league of the year 1628. On his return home he received from Charles I. the honour of knighthood. In 1640 Sir William Waller was returned to the Long Parliament for Andover; and he immediately took his seat among the members of the committee on the abstention of the clergy from ordination and service which had given him a strong attachment to Presbyterianism; and he had also, it is said, a热度, among the seventy members of the Star-chamber. On recourse being had to the committee for the appointment of members to the parliament, he was chosen as one of the most faithful officers, and among Tercey, Kinsky, Illo, Neumann, and some traitors, such as Gordon, Butler, and Leslie, who were bribed by Piccolomini, and had promised to execute the bloody order of the emperor.

On the 23rd of February, Charles, who was commander of Eger, gave a splendid entertainment to Waldstein’s officers, at which the duke was not present on account of his ill health. After dinner an armed band rushed in, and the friends of Waldstein fell beneath their swords. Waldstein himself was in his room, and观 window and asked a sentinel what it meant. Suddenly Captain Deveroux, at the head of thirty Irishmen, rushed into his apartment; and while his men shrank back at the sight of their great commander, he stood bold, his thoughts instantly turned to his escape. He was speedily captured, and was brought before the executioner. Deveroux, thus accused, cried out, ‘Art thou the traitor who is going to ruin the emperor?’ With these words he lifted his pistol. Waldstein, without uttering a word, opened his arms and received the deadly blow in his breast. He was always thought of, and spoke little, and so he was in his last moment: he fell and died silently.

His wealth was partly divided among his enemies, each of whom received a large share, for the revenue of Waldstein’s estates was 250,000/. (21,25,000. according to the present value of money). Part of his estates were kept by the emperor, who paid for 3000 dead masses to be read for the soul of his great general.

The present time has generally been believed that Waller was so over-served by the state of his enemies, which was sold for 3000 dead masses to be read for his soul, that he never saw the cardinal’s head; but the truth is, that Waldstein has never been proved. About twenty years ago Dr. Friedrich Forster from Berlin discovered many autograph letters of Waldstein in the family archives of the count of Arundel, at Berlin, in consequence of which discovery he was admitted, by order of the emperor Francis I., to the secret part of the archives of the military council at Vienna, which had hitherto not been used by the biographers of Waldstein and the Hapsburgs. Forster was a considerable number of letters, which he published under the title ‘Waldstein’s Briefe.’ Berlin, 1826-1829, 3 vols. 8vo.

Having been invited by the counts of Waldstein, who are descended from the brothers and uncles of Albrecht, to continue his researches, he was enabled to prove the complete innocency of Waldstein, and that he never was a traitor or the instigator of the rebellion. He published his results under the title ‘Waldstein, Herzog zu Mecklenburg, Friedland, und Sagan, als Feldherr and Landesfürst,’ 8vo., Potsdam, 1854, 1 vol. 8vo. The count has fought a suit against the Austrian fiscus for the purpose of recovering the Waldstein estates which had been appropriated to the fiscus. It has lately been reported that the present emperor, Ferdinand I., without waiting for the legal decision, has ordered those estates to be resold to Whigs, who would value them highly.
racter and conduct, which was published from his manu-
script, in 1805, with an introduction by the editor, at Lon-
don, in 1793. Both these works give a favourable impres-
sion of his honesty and ingenuousness, as well as of his
shrewdness and general intellectual ability; and the second is
of considerable historical value.

WALLER, EDMUND, a celebrated English poet, was
born 3rd March, 1605, at Coshelhill, in the county of Her-
ford. His father, Robert Waller, Esq. of Amersham, or
Amersham, in Buckinghamshire, in which parish Coles-
en, a daughter of an old Essex family, and had in early life followed the profession of the law. Edmund was the eldest of several sons and daughters, but he was still in his boyhood when his father died, leaving him an estate of 3,000l. a year, and his mother, daughter of Griffith Hampden of Hampden in Buck-
inghamshire, and aunt of the patriot, who was consequently the poet's cousin. The relationship, if it is to be so called, of Edmund Waller to Cromwell, about which there has been considerable historical value, is this. Waller's eldest uncle, William Hampden, the father of the patriot, having married Cromwell's aunt, Elizabeth; so that Hampden the patriot was first cousin both to the poet and to the pro-
tector. (Noble's Memoirs of the Protectoral House of
Commons, 1707, where Waller's family is erroneously set down at 33,000x. per annum, and his father is in one place called Richard, instead of Robert.) John-
son, whose account is copied without either correction or acknowledgment by Chalmers, makes Waller's mother to have been a daughter of the patriot, whose father he incor-
rectly names John.

Waller was educated at Eton, whence he proceeded to
King's College, Cambridge. His earliest biographer, the writer of a memoir prefixed to the edition of his poems published in 1640, says that Waller was a seat tenant of
the House of Commons, at the age of sixteen, for the borough of
Amersham. If so, he would appear to have been returned to the third parliament of James I., which met in January, 1621, and to which that borough of Amersham clung, as it clung for representation, after every effort ceased to do so ever since the second year of Edward II. The
claim was eventually allowed; but it may be doubted if
Waller, although he may have been elected, was permitted
to take his seat, at least was not regarded as a member, although he may have sat silentio, as was then some-
times done. No members for Amersham, or for Wendover
and Great Marlow, which were similarly circumstanced, are given in the common lists of this parliament. Whether Waller was returned to the next, and to the final parliament, which met in February, 1623, is not known; but it is probable that he was. In the first parliament of
Charles I., which met in 1625, he was returned for Chip-
ning-Wycombe. It is not certain that he sat in the next, and to which his name is given in the next year's enumera-
tion, which represented Amersham in Charles's third parliament, which sat from March, 1627, to March, 1629, and also both in the short parliament of April, 1640, and in the Long Parlia-
mnt which assembled in November of the same year.

The earliest of Waller's poems is commonly stated to
have been produced towards the end of the year 1623,
when the event which it celebrates happened, the escape of
the prince (afterwards Charles I.) from being ship-
warded in the road at St. Albans, on his return from
Spain. Yet it certainly was not published till some years
later; and not only the title "On the Danger his Majesty
(being Prince) escaped," &c., but even the verses them-
selves seem rather to imply that they were not composed at that time. It is, however, possible that the style and versification of this poem have
quite as much neatness and finish as those of his latest
days; so that, as has been said by one of his editors, as quoted by Johnson, 'were we to judge only by the word-
ing, we should say he knew what was the fashion of verse at fourscore.' Dryden has stated (in the preface to his
Fables') that Waller himself attributed the polish and
smoothness of his versification to his diligent study of Fair-
fax's translation of Thos. Clarendon says expressly that
at the age when other men used to give over writing verses (for he was near thirty years when he first engaged
himself in that exercise, at least that he was known to do
so), he surprised the town with two or three pieces of that
kind; as if a tenth Muse had been newly born, to cherish
dropping poetry.' In truth, there are only two or three of
his poems that could have been written before his twenty-
fifth year.

Some years before this date he had married Ann,
dughter of Edward Banks, Esq., a very wealthy citizen
of London, having gained the heart and hand of the lady
by his talents and the interest of the family, and he was in
favour of a rival suitor. By this match he considerably augmented his fortune. His wife, after bringing him a son who died,
and a daughter, who when she grew up married Mr. Dogmer of Oxfordshire, died in childbirth, and let him, as John Waller says, 'on a widow's of about five and twenty
gray and wealthy, to please himself with another marriage.
The older accounts make him to have lost his wife in 1629
or 1630.

It could hardly then have been, as is commonly rep-
resented, almost immediately or very soon after this that
he began to pay his addresses to the Lady Dorothy Sidney,
the eldest daughter of the Earl of Leicester, whom he
made famous in many of his love verses under the name of
Sarah. Some, however, who are enthusiasts in this case,
ins isted of his marriage in 1639 married Henry, lord Spencer, who, in 1643, was
created earl of Sunderland, and was killed in September,
the same year, at the first battle of Newbury. [Vol. xii.
p. 286.] As Lord Spencer at the time of his marriage
was certainly not nineteen, it is not probable that the
bride could have been old enough to be sought in marriage
eight or nine years before. sacharissa, who, after the death
of her first husband, married Mr. Robert Smythe, sur-
vived till 1683. Another of Waller's temporary attach-
ments at this time was to Miss Mary Bresse, of Eton,
whom he has celebrated under the poetical name of
Amoret. At last, soon after the marriage of Sacharissa,
but in what year is not precisely known, he married a
Miss Mary Bresse, or Beaux, of whom nothing is recorded
elsewhere. He was probably in the neighborhood of his
sons and eight daughters, and that she was, according to Aubrey,
the antiquary, distinguished both by her beauty and her
good sense.

When government by parliament was resumed, after an
interruption of twelve years, in 1640, and Waller found
himself again in the House of Commons, he joined the
party in opposition to the court, where, although his for-
tune, wit, and poetical reputation had made him a dis-
tinguished figure, he is said to have been admired by
and even suspected as the near kinsman of Ham-
pden. But his temper and position alike withheld him from
going very far with the reformers or revolutionists; and
on the approach of the crisis he seceded from his party,
and certain events having transpired, he found himself
in the king's set up his standard at Nottingham, in August,
1642, Waller sent him a thousand broad pieces; and,
although he soon after returned to his place in parliament.
he is supposed to have done so by his majesty's permission
of their right, and then in a letter from the king, 'not
of
the royal side— with great sharpness and freedom,' says
Clarendon, 'which, now there was no danger of being
ousted, was not restrained; and therefore used, as an
argument against those who were gone upon pretense
that they were not sufficient to give their opinions freely
in the House; which could not be believed, when all men
knew what liberty Mr. Waller took, and spoke every day
with impunity against the sense and proceedings of the House.'

Waller was one of the commissioners sent by the parlia-
mont to the king at Oxford, after the battle of Edgehill,
in January, 1643; and it was soon after this, in the end of
May, that the design known as Waller's plot was discov-
ered. It is difficult to say what was really the object of
this plot of Waller, or of the plot of Clarendon, to dis-
another which was detected about the same time—a project of a loyal London merchant, Sir Nicholas Crispe, to raise an armed force, when a fit opportunity should occur, to act against the parliament, for which purpose he had obtained a commission of array from the king. Waller's embassy was attended by a professed confederate, Mr. Tomkyna, who held the office of clerk of the queen's council, and had an extensive connexion and influence in the city; and their proceedings were discovered, according to one account, by a servant of Tomkyna, who, while lurking behind the house during a conference between his master and Waller; according to another version of the story, by a sister of Waller, who was married to a Mr. Price, 'a great parliamentarian,' and her chaplain, Goode, who stole some of his papers. The commission of array granted to Crispe was reversed, and his friends are still in doubt as to the explanation as having happened through an accident, and Waller always denied that he knew anything of Crispe's scheme.

In other respects his confessions were ample enough. 'Waller,' says Clarendon, 'was so confounded with his own shame, that he could recover his understanding.' After he appeared to be in a more composed state, he was brought to the bar of the House of Commons, on the 4th of July, and there delivered a speech, which is printed in his Works, and which certainly indicates nothing like a sincere repentance. He was committed to the Marshalsea, and there he was confined till he died; and some others had their estates confiscated, and were long detained in confinement. Others made their escape to the king at Oxford. As for Waller, undoubtedly the prime contriver and agent in this, whether confined or not, his life was saved, but the facts connected with his deliverance are variously related. In the Life prefixed to his Works it is expressly asserted that he was arrested at Gunwharf, on the 4th of March, and that he only confessed to the murder of Mr. C. Waller, was kept in prison till he died; and some others had their estates confiscated, and were long detained in confinement. Others made their escape to the king at Oxford. As for Waller, undoubtedly the prime contriver and agent in this, whether confined or not, his life was saved, but the facts connected with his deliverance are variously related. In the Life prefixed to his Works it is expressly asserted that he was arrested at Gunwharf, on the 4th of March, and that he only confessed to the murder of Mr. C. Waller, was kept in prison till he died; and some others had their estates confiscated, and were long detained in confinement. Others made their escape to the king at Oxford.
nothing is recorded; nor of the eighth any thing more than her name, Octavia, given to her from her place in the list.

The merits of Waller as a poet have been elaborately discussed by Johnson. He will scarcely be now admitted to have been on his own day what he is called by the writer of his life in the 'Biographia Britannica,' 'the most celebrated lyric poet that England has ever produced,' unless perhaps we are to consider a lyric poet as meaning a poet who writes nothing but lyrics, and then the title would not be applicable to Waller. He was certainly, in so far as respects dictation and versification, the most correct poetical writer that we had before Pope; and it cannot be questioned that his example had considerable effect in the form and matter of the many hours of our poetry, although it may also have helped somewhat to tame its spirit. Yet, although there is not much glow of imagination in Waller, there is often a great deal more than mere prettiness or even elegance; his more serious pieces have of dignity and elevation of thought, as well as of expression. And generally his language has the high merit of being a most lucid mirror and exponent of his meaning, giving out with perfect distinctness at least the lines and formal features of the idea, however little it may be in the power of reflecting colour, light, or rather, however little of that there may be for it to reflect.

WALLICHA, a genus of plants named in honour of Dr. Wallich, superintendent of the Long Island Botanic Garden at Calcutta. This genus belongs to the natural order Buttericeraceae, and has the following characters:—Involucel 3-4 leaved, distant from the flower, and small. The calyx 4-parted, with oblong linear lobes. The corolla:—The tube spreading, reflexed, with thick villous claws. The stamens monodelphous, about 20; outer ones shortest. The ovary ovate, 8-celled, with single style and 8 stigmas. The fruit capsular, 8-celled, 8-valved, and a single seed in each cell. The annual and biennial, the plants a beautiful tall trees, attaining a height of 30 or 40 feet. It is a native of Nepal. It may be grown in a mixture of loam, peat, and sand, and may be propagated by cuttings.

WALLINGFORD, a parliamentary borough on the right or south bank of the Thames, in 6 miles from Oxford, in the county of Berkshire, 49 miles from the General Post Office, London, by coach-road through Brentford, Colnbrook, Maidenhead, Henley, and Nettlebed; or about 53 miles by the Great Western Railway, which passes within about two miles of the town.

There is reason to think that Wallingford existed in the time of the Romans, coins having been dug up here, and the form of the ramparts (not of the castle, which is of later origin) indicating that they have been traced by the Roman road, and the site of Wallingford in A.D. 1006, when it was taken by the Danes. The name of the place is variously spelled in ancient writers. In 'Domesday' it is called Wallingfords, and is described as a town with 30 acres of land and 46 houses. The church held, which is the present one, houses, paying gable-tax to the crown: the tenants were bound to render personal service to the king.

There was a castle here at the time of the Conquest, belonging to Wigod, a Saxon noble, who invited William the Conqueror, after the battle of Hastings, to come to Wallingford, where William received the homage of Archbishop Stigand and the principal nobles before marching to London. About a year after (A.D. 1067) Robert D'Oyley, a Norman baron, who had married Wigod's only daughter, built a strong castle here, but whether on the site of Wallingford castle or not is not clear. In the civil war of Stephen this castle was held for the Empress Maud by Brian Fitzcount, to whom it then belonged. Stephen besieged it without success several times, and here the Empress found refuge after the battle of Evesham. After her defeat, Oxford, by order of Maud, besieged a fort which Stephen had erected at Crowmarsh, on the opposite side of the Thames; and Stephen coming to its relief, a peace was concluded between the rival parties, which gave some respite to the long-disturbed kingdom. During the imprisonment of Richard I. Wallingford Castle was occupied by his brother John, but was taken from him by the king's party. In the troubles of John's reign one or two meetings of the king and barons were held at Wallingford, and III. (A.D. 1264) Prince Edward, the king's son (afterwards Edward I.), Prince Henry his nephew, and Richard, King of the Romans, his brother, were confined for a time in the castle. The castle was twice besieged in the troubles of the reign of Edward II. In Leiland's time it had a good deal to do with both by and Cameron de Cameron having a double wall, and Cameron speaks of the citadel; or keep, as standing on a high mound. In the civil war of Charles I. it was repaired and garrisoned for the king, and was regarded as a post of importance; it was set on fire by Fairfax, who surrendered to Fairfax, and was afterwards demolished so effectually, that, except part of the wall toward the river, scarcely any part of the buildings remains: the mound on which the keep stood is overgrown with trees.

Within the limits of the town are the ruins of a hospice, the church of which was attached to the priory of Wallingford, and the priory itself, in Henry III.

The borough of Wallingford comprehends the following parishes:—

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<td>St. Leonard</td>
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<td>Mary-le-More</td>
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<td>St. Peter</td>
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<td>Wallingford Castle parish</td>
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The returns are from the census of 1831: about one-seventh of the population was agricultural, and only four men were employed in manufactures. The population of the borough in 1821 was 2093, so that the increase in ten years was 476, or nearly 24 per cent., a considerable increase for a town in a quiet agricultural district. The pretence of the castle is incorrectly given in the census as within the borough. The population of Crowmarsh Street, which is on the opposite side of the Thames, in the parishes of Crowmarsh and Newnham Murren, Oxfordshire, and which may be regarded as a suburb, was about 100 (one nineteen houses), bringing the population of the town and suburbs to about 3000.

The town stands in the eastern part of the area included in the boundaries of the borough, on the right or south bank of the Thames, about 1 mile distant from the stone bridge, and has about 60 houses, paying gable-tax to the crown. The town was incorporated by charter in 1646, in which it had sustained great injury: it retains some portions of Norman architecture. St. Peter's was also ruined in the siege, and remains in ruins more than a century: it has a spire of very singular form, erected in the expense of Sir William Blackstone, in the year 1646, in which the church was restored from its ruined condition. Sir W. Blackstone is buried in the church. There are meeting-houses for Independents, Baptists, Methodists, and Quakers. The chief trade of the town is in cloth, flax, malt, and coal; maltasting is not extensively carried on as formerly.
Wallington is a borough by prescription, and has sent representatives to parliament since the time of Edward I.; they were returned by the inhabitants paying scot and lot. Thirteen meetings were returned for it, one of which was returned for the Royal Society: but we do not hear of any particular attention to mathematics on his part till 1647, when he met with Oughtred’s ‘Clavis,’ at which time he says he was a very young algebraist, being then more than thirty years old. He had a writer who was a partner of the same name, and lived at Castletown, on the island of Man; they were perhaps more of the same celebrity, that they showed no strong tendency to mathematical pursuits at a very early age. When the Independents began to prevail, Wallis was one of the clergy in opposing them; and in 1648 subscribed a remonstrance against Charles I. He was then rector of St. Martin’s Church in Ironmonger Lane, but in 1649 he was appointed Savilian professor of geometry at Oxford by the Parliamentary visitors, his predecessor, Dr. Turner, having been ejected. He next removed to Oxford, and applied himself diligently to mathematics. In 1650 appeared his Animadversions on the celebrated Richard Baxter’s ‘Aphorisms of Justification and the Covenant,’ a moderate piece of theological controversy, undertaken, Wallis supposes, at the desire of Baxter himself. At the end of 1650 he first met with the method of indivisibles in the writings of Torricelli, and from this time the researches begin, of which we shall presently have to speak. In 1653 he published, in Latin, an English grammar, in which he undertook the improvement of articulate sounds prefixed. In the same year he deposited in the Bodleian Library a collection of deepened letters, which afterwards caused some trouble to the librarians. In 1654 Wallis was called to the degree of divinity, and in the following year published his ‘Arithmetica Infinitorum,’ with a treatise on Conic Sections prefixed. In 1655 he began his controversy with Hobbes, who, in his ‘Elementorum Philosophiae Secund Prima,’ had tried to reduce geometry to a tract entituled ‘Enchusus Geometriae Hobianae.’ Hobbes replied in ‘Six Lessons to the Professor of Mathematics at Oxford,’ on which Wallis published ‘Due Correction for Mr. Hobbes, or School Discipline for not saying his Lesson First.’ Oxford, 1657. Hobbes, however, published his ‘The Marks of the absurd Geometry, &c. of Dr. Wallis,’ London, 1657. Wallis answered in ‘Hobbiani Punctis Disputacio, in answer to Mr. Hobbes’s Tractatus, Oxford, 1657.’ The controversy was renewed by Mr. Hobbes in 1658, in ‘Examinatio et Emendatio Mathematicorum Hodermans,’ to which Wallis replied in ‘Hobbius Heautontimoromenos, Oxford, 1658.’ Wallis, as may be supposed, had the right on his side; and we are disposed to regret that a dispute of this kind should have arisen, and that this man, in the collection of his works, though we cannot but respect the motive, namely, the desire not to attack an opponent after his death. In 1656 he published his treatise on the angle of contact, and a defence of it in 1658.

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P. C., No. 1686. given a succinct account of the proceedings of this body. (See the Biographia Britannica.) In this year also he married. In 1645 he was among the first who joined the project of founding the Royal Society, and was appointed to two from one. The boundaries of the borough were enlarged by the Boundary Act, by the addition of the parishes of Brightwell, Sotwell, North Moreton, South Moreton, Burnham in Close, Greenaw, and Newnham Murren; the liberty of Clapcott, and the three extra-parochial chapels of Hambleden,arges, and Castley; and part of the parishes of Cholsey, Aston-Tirrel, and Aston-Uphorpe. By these additions the number of houses and the population of the borough were nearly doubled. This act was renewed by the Reform Act in 1643, 1649, 1653, 1661, and 1671. From the act of 1661 to 1680. By the Municipal Reform Act the borough has 4 aldermen and 12 councillors, but no commission of the peace, except on petition and grant. The municipal boundary was not altered by that act; but a more extended coast of extending the Castle precinct, which was removed to Oxford, and applied himself diligently to mathematics. In 1650 appeared his Animadversions on the celebrated Richard Baxter’s ‘Aphorisms of Justification and the Covenant,’ a moderate piece of theological controversy, undertaken, Wallis supposes, at the desire of Baxter himself. At the end of 1650 he first met with the method of indivisibles in the writings of Torricelli, and from this time the researches begin, of which we shall presently have to speak. In 1653 he published, in Latin, an English grammar, in which he undertook the improvement of articulate sounds prefixed. In the same year he deposited in the Bodleian Library a collection of deepened letters, which afterwards caused some trouble to the librarians. In 1654 Wallis was called to the degree of divinity, and in the following year published his ‘Arithmetica Infinitorum,’ with a treatise on Conic Sections prefixed. In 1655 he began his controversy with Hobbes, who, in his ‘Elementorum Philosophiae Secund Prima,’ had tried to reduce geometry to a tract entituled ‘Enchusus Geometriae Hobianae.’ Hobbes replied in ‘Six Lessons to the Professor of Mathematics at Oxford,’ on which Wallis published ‘Due Correction for Mr. Hobbes, or School Discipline for not saying his Lesson First.’ Oxford, 1657. Hobbes, however, published his ‘The Marks of the absurd Geometry, &c. of Dr. Wallis,’ London, 1657. Wallis answered in ‘Hobbiani Punctis Disputacio, in answer to Mr. Hobbes’s Tractatus, Oxford, 1657.’ The controversy was renewed by Mr. Hobbes in 1658, in ‘Examinatio et Emendatio Mathematicorum Hodermans,’ to which Wallis replied in ‘Hobbius Heautontimoromenos, Oxford, 1658.’ Wallis, as may be supposed, had the right on his side; and we are disposed to regret that a dispute of this kind should have arisen, and that this man, in the collection of his works, though we cannot but respect the motive, namely, the desire not to attack an opponent after his death. In 1656 he published his treatise on the angle of contact, and a defence of it in 1658.

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his works: in the same year also, his treatise on Angular Sections and on the Cune-cuneus. In 1685 he wrote theological pieces on Melchisedec, Job, and the titles of the Psalms. In 1687 appeared his celebrated work on loge. In 1688 he edited Archimedes and fragments of Pappus. In 1689 he published his pieces on the Trinity, and on the baptism of infants; and, in 1692, his defence of the Christian baptism against the Sabbatarians, or observers of Saturday. The collection of his works by the curators of the University press began to be made in 1693; the three volumes of the first series appeared in 1693, 1694, and 1695.

In 1692 he was consulted upon the adoption of the Gregorian calendar, or new style, against which he gave a strong opinion, and the design was abandoned. In 1694, when the first two volumes of his works appeared, he was appointed reader in mathematics, beginning the following year with the followers of Newton and Leibnitz. Some remarks were made on his assertions as to the origin of the differential calculus in the Leipsic Acts, which produced a correspondence, and this correspondence was published in the third volume.

He died October 28, 1703, in his 88th year. The character of Wallis as a man was attacked upon one occasion only, in which it was asserted that he had deciphered the king's letters after the battle of Naseby, to the disadvantage of his majesty and his royal cause.

It was also said that the collection of deciphered letters which he gave to the University had some of its contents withdrawn by him when the Restoration was approaching. Wallis himself denied that he had deciphered the king's letters; and, though he granted his adherence to the parliament to be justifiable, he had been no more than his duty. A sort of repugnance exists to a decipherer, though common sense tells us that those who intercept and open an enemy's letter which, being deciphered, is transformed into language which is added to those into whose hands it may fall, are much more obnoxious to any charge than the decipherer of a letter which, being written in cipher, more resembles a defiance.

All that can be said against Wallis, if it amounts to anything, is, that when at one time and under very different circumstances, he wanted the restoration, he used his talents for it. And as to the charge of withdrawing the letters from the Bodleian, it ought to have been added, that when he presented them, it was with a written reservation to add or withdraw. The best testimony to the general character of Wallis is as follows:—He was exceedingly obnoxious to the high church party, and entirely from his love to the ministry, from his having been forced upon the University by external and democratic power. But all that his contemporary Wood, who will not admit him into the 'Athenius Oxoniensis,' as an Oxford writer, can say or hint against him, is much as well as the most remarkable, and yet there was no want of disposition to disapprove a Presbyterian in Wood, as witness the following liberal sentiment:—'The senior proctor, according to his usual perjury (which he frequently used in his office, for he was born and bred a Presbyterian), did pronounce,' &c. &c. (Ath. Oxon., ii. 1045.)

Wallis, in his literary character, is to be considered as a theologian, a scholar, and a mathematician. As a divine, he would probably not have been remembered, but for his eminence as a mathematician. The other characters—literary, religious, and trigonometrical—are still quoted in the histories of opinions on that subject. At the time of South and Sherlock, much was written on the Athenian Creed which was meant to be of an explanatory character: those who read South and Sherlock, and those who have the charter of the Trinity, may also have found to be neither; but many have considered him scarcely orthodox. If the character of Wallis has been elevated as a divine by his celebrity as a philosopher, his service has a so much the more reason, for the same reason, that of not valuing the illuminations of the editor of Ptolemy's Harmonics, of the commentary on it by Porphyrius, and of the later work of Briennius; as also of

* Such volume ought to have a portrait, those of the two first with a skull; and a frontispiece, that of the last with a flowing wig, and the book of a syllem: but both the portraiture and the frontispiece were very like that of the coat of arms appended. The first volume has a double title page, one for each of the two volumes (1693).

It has been suggested that, as Charle's private cabinet was taken at Naseby, in all probability the key of the cipher was taken with the letters, but in one day it would be asked what it mattered whether the letters which Wallis deciphered were those of Charle, or of his generals and ministers.
ology will not yet take its place, under definitions, by the side of the latter.

Of the several generalizations, in which Wallis was superior to any preceding mathematician, enabled him to avail himself of ideas which the ordinary processes of arithmetical and algebraic methods had offered for centuries without results. Having, by his use of fractional indices, been able to supply every case of $a^{x} b$, or an equivalent result, it struck him that $f^x g^x$, still using modern symbols, must be capable of a similar interpolation. The case of $a^x + b$ obviously gives the circle, and after making various attempts in this direction he was able to present the well-known result, which is still remembered by the name Wallis; but the method which produced it, is, though anything but forgotten, not always duly remembered as belonging to Wallis. This result is as follows, in modern terms:—

$$\left(\frac{a}{b}\right)^{x} \cdot \left(\frac{c}{d}\right)^{x} = \left(\frac{a}{b} \cdot \frac{c}{d}\right)^{x}$$

for all values of $x$. It is often expressed thus:

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{a \cdot c}{b \cdot d}$$

The works of Wallis contain many other results which may be considered as advanced specimens of the integral calculus in every direction. The most remarkable of these is the solution of the parabolic, which he showed to depend upon the quadrature of the hyperbola. The Binomial Theorem was a corollary of the results of Wallis on the quadrature of curves, the sagacity of Newton supplying that general mode of expression which it is extraordinary that Wallis should have missed.

We have not spoken of the work on logic, which is not only of the highest excellence, but is perhaps, owing to the recent methods in modern mathematics, the only work of Wallis on the subject which we could now recommend a student to read. In conclusion we may say of the subject of this article, that it rarely happens that there is so singular a union of originality and labour.

WALLIS, SAMUEL, the first navigator after Quiros (assuming that Quiros's Sagittaria is Tahiti) who discovered the island of Tahiti. The date of Wallis's birth and his parentage are unknown. In 1756 he was lieutenant of the Gipsy Queen, and six years after was put into command of the twenty-four gun ship,which he was promoted to be lieutenant of the Torbay seventy-four, Vice-Admiral Boscawen's flag-ship. On the 8th of April, 1777, he received his commission as captain of the Port Mahon, of twenty guns, and was sent to North America with Holbrook as his warrant officer. In 1760 he was appointed to be lieutenant of the Island with the 1760 '29 W. long. It received its name from Capt. Wallis, who discovered it on the 15th of December, 1767. It is five to six miles from north to south, but it is not much more than half these dimensions in width. The interior of the island is rather high, but along the shore it is low and rocky. The island is surrounded by a reef, in which a break occurs on the west side, with which he was commissioned to break a vessel may anchor in sight fathoms water. The reefs are from two to three miles from the shore. The island is covered with trees to the water's edge, and many of them are of large size. In some parts there are plantations of cocoa-nuts. There are several species of fish in the island. The inhabitants go naked, except that they wrap a kind of mat round their middle. They are armed with maces or clubs; but Capt. Wallis, the only navigator who has visited this island, had no intercourse with the natives.

(Hawkesworth's Account of the Voyages undertakenn for making Discoveries in the Southern Hemisphere, vol. 1.)

WALMESLEY, CHARLES, an English mathematician and astronomer, was born in the year 1724. Being a member of the Roman Catholic church, he became a monk of the Benedictine order in this country, and he took the degree of doctor in theology in the Sorbonne. In 1750 he was elected a Fellow of the Royal Society of London, and was made archbishop and apostolic vicar of the western district of England.

His principal work, which is an extension of the 'Harmonia Mensuralum' of Cotes, is entitled 'Analyse des Mesures des Rapports et des Angles, ou Réduction des Angles Premiers aux Angles de la Chordale.' It was published in Paris, 1749; in the same year he published his 'Théorie du Mouvement des Apsides,' 8vo., and in 1758 the treatise 'De Inequalitatis Motum Lunaria,' 4to., Florence.

Dr. Walmesley was one of the mathematicians employed in regulating the calendar in this country, preparatory to the change of the style, which took place in 1752, and he wrote several papers on astronomical subjects, which were published in the 'Philosophical Transactions.' As a theological writer he is known only by his productions, and explanations of the Apocalypse, Ezekiel's vision, &c. He died at Bath, in the 76th year of his age.

WALNUT-TREE, the common name of the species of Juglans, a genus of plants belonging to the natural order Juglandes. The nuts are large, oblong-obovate in form, and enclosed in a hard, thick, leathery shell. The flowers are unisexual, and those containing the stamens and pistils are found on the same tree. The staminate flowers are arranged in cylindrical drooping solitary catkins, which are developed from buds borne on the shoots previous to that in which the catkin appears. The stamen is composed of 5 or 6 scales, which are attached to a bract or bracteate scale. The stamens are from 18 to 56 in number. The pistillate flowers are solitary, or group together in a group, and are terminated by a shoot developed in the same year. The calyx is ovate, including the ovary, and adhering to it, except at the four-toothed tip. The petals are 4 small, and inserted into the free part of the calyx. The fruit has one cell.
and one erect ovule. The stigmas are two or three, and fleshy, scaly with glands. The fruit a drupe. The covering of the nut is a fleshy husk of one-piece, that bursts immediately it is woody. It is a very common fruit of two varieties.

The species Carya, three of which are natives of North America and one of Asia. The genus Carya, to which the hickory-trees belong, was formerly included under Juglas, but was separated by Bentham as the species of Juglas are much more rapid in their growth than those of Carya, and are furnished with only simple aments.

The Royal or Common Walnut-tree (Juglas Regia) is the oldest and best known of the species. Its leaves are red or crimson in spring, and of a bright green, shining, or serried leaflets. The fruit is oval and seated on a short inflexed peduncle. The nut is rather oval, and uneven. It is a native of Persia, in the province of Ghilan on the Caspian Sea. It has been also seen by Loureiro in the north of China, and Pallas, who saw it in Russia and south of the Caucasus, supposed it indigenous there.

The walnut-tree was known to the Greeks under the name of Persicon, Basileon, and Caryon. It is uncertain at what time it was first cultivated by the Romans before the death of the emperor Tiberius. Its wood was much valued by the Romans, and the nuts were also eaten. There is no history of the introduction of this tree into Great Britain, but it is now very generally cultivated in the nursery trade, although efforts are being made to propagate it by itself. Its seeds. It is only however in the southern and middle parts of England that the walnut brings its fruit to perfection.

The walnut, when full-grown, is a large handsome tree with spreading branches. Its trunk is thick and massive, and covered with a deep furrowed bark; the branches are of a grey colour, and smooth. The leaves, when bruised, give out a very peculiar aromatic odour, and in the heat of summer this scent is sometimes so powerful as to have a pleasant effect on the sense of smell. The foliage is graceful and light, and of a bright yellowish green colour, which contrasts well with trees having foliage of a darker shade. Its leaves are oblong, entire, acuminate at the apex, and round at the base; they grow very rapidly and vigorously in the climate of London, and trees will attain a height of 20 feet in ten years. It sends down into the earth a large tap-root, with numerous branches, and, on account of the size and strength of the root, the soil is no longer subject to erosion. The effects of wind, or better adapted for exposed situations. It is said that plants will not grow under its shade; this probably arises from the bitter properties of its leaves: when they are not allowed to accumulate, the shade of the walnut does not appear so injurious as that of other trees. The walnut-trees may be planted at any time they are easily transplanted; the heat of the summer being a means which will not injure them, and then exposed to dry for a day or two in the sun. The best mode of keeping the nuts fresh for eating is to bury them in dry soil or sand, so deep as not to be reached by frost. The best way of gathering them is to scoop out the meat, which is done in dry cellars and covered with straw. When the nut is to be preserved through the winter for the purpose of planting in the following spring, it should be laid in a ret heat as soon as gathered, with the husk on; a small heap should be kept over frequently in the course of the winter.' (Loudon.)

The albumen which constitutes the bulk of the seed of the walnut contains an oil, which is used in large quantities especially on the Continent. It is obtained by reducing the oil-seeds, which must be being liable to rapidity with the wood with great care in keeping, as it becomes tainted by slight changes in the state of the atmosphere. That which is cold-drawn from the seed, and subsequently refined, is the most preferable.

It has however always the taste of the walnut, which is to some persons disagreeable. The oil obtained by heat is used by artists, and also for lamps. Artists use this oil in mixture with white, or any delicate colour; they paint their scent, and for general printing also. In Paris, walnut-oil is considered indispensably necessary in order to obtain a fine impression, whether in black or in colours. For this purpose they use the timber of the walnut from France, and the colour with which it is to be mixed. In all cases it is reduced in bulk by boiling or by setting fire to it, so as to reduce it to the required consistency. One bushel of nuts, it is said.
will yield about seven pounds of this oil. The mass which is thus made is exposed to the sun, air, and rain, and used as food for swine, sheep, and poultry, and in some places it is made into candles, which give a tolerably good flame.

The husks and root of the walnut both yield a dye which is much used by gypsies and theatrical performers for staining the skin brown. It is also used by cabinet-makers and joiners to stain white and yellow woods of a dark brown or black colour, like that of the walnut. In the preparation of the dye from the husks they should be allowed to remain a week in the country. It is by distilling to the decoction fresh water, according to the colour required to be produced by the solution. The sap of the walnut-tree contains a large quantity of saccharine matter; and in some countries the trees are tapped for the purpose of supplying it as a sugar. There is also in many parts of Europe and Asia fermented and made into wine, and a spirit is also distilled from it. The leaves of the walnut, as well as other parts of the tree, contain a large proportion of alkaloids, and in some parts of France they are collected and burned for the sake of the potassa contained in the ashes.

The bark of the leaves, the husks, and the oil of the walnut have all been used in medicine, and had at one time, and perhaps are still, extensively employed for that purpose. The albumen of the seed, possess a bitter principle, which acts as a tonic and an anthelmintic, and has been its great recommendation as a medicine. Cowley, in his 'Plants,' sums up the virtues of the walnut in the following lines:

"One of the most useful plants that grow.
Her timber is for various uses good.
The currer she supplies with liberal wood.
Her leaves supply the painter with glowing colours last.
A table she affords us, and repast.
Every part of her is a useful supply.
The most potent of all is the virtue she deadens with the shooting of raging skyes.
The Festival king, who lived where poisons grew,
Shin'd in antimony, her virtues knew."

Anglers employ an infusion of the leaves or husks for procuring worms, which, when speedily brought to the surface, will quickly arise to the sight of the worm. There are several distinct varieties of the walnut cultivated. The maximus is known by the large size of its nuts, and is called the double large French. The nuts are twice as large as others; but in drying, the kernels shrink to half their size, so that they ought to be eaten as soon as they are gathered. This is a fine handsome tree with large leaves, but its timber is not so durable as that of the common walnut. The thin-shelled or Tintomace Walnut (J. f. tenera) has very thin shells, so much so that birds of the Tintomace family pierce them with their bills and eat the kernel. The fruit of this variety is considered the best for eating, and it also yields the largest quantity of oil. It is still more valuable in a manufacturing point of view, as it is a variety of great desirability in districts where the frosts are severe in spring. Its leaves do not appear before the end of June, and it ripens its fruit as early as the other varieties. There is a variety known in Norfolk and Suffolk by the name of the Highflyer, which is said to yield the best nuts of any of the English varieties. Several other varieties are enumerated in continental lists; and in the Fruit Catalogue of the Horticultural Society for 1832, nine varieties were recorded as growing in the gardens of the Society.

The Black Walnut-tree (Juglans nigra) has leaves with from 13 to 17 leaflets, which are unequal at the base, serrated, and somewhat downy. The fruit is globose, roughish, with minute prominent points, situated upon a short peduncle. The nut is globular, somewhat compressed at the sides, ridged, and furrowed. This is a North American tree, and is found in all parts of the United States, as far as 40° 50' N. lat. It is abundant in the forests about Philadelphia, and is met with from Georgia to Michigan. The gas is plentiful in the north of England, and is obtained in the eastern states of America in an extent of 2000 miles. It is one of the first trees that was introduced from America to Europe, having been brought to England by the younger Tradescant in 1656. The black walnut is a remarkable tree, and attains a height of 60 or 70 feet in about 40 years. It bears fruit in this country, but it is very much inferior to that of the European walnut. The wood of this tree is used almost for the same purposes as that of the last. It is heavier, stronger, susceptible of a finer polish than the European species, and is not so liable to be attacked by worms.

The Gorse Walnut or Butternut Tree (Juglans cinerea) has 15 to 17 leaflets, rounded at the base, serrate, and tomentose beneath. The petiole villous. The fruit is ovate with a taper tip, downy, and covered with small transparent vesicles containing a viscid matter. The nut is oval, with very prominent irregular ridges. This tree is from North America. It is found in the United Lakes and in the temperate regions of the United States. This tree attains in its native regions a height of about 50 or 60 feet. Although it was introduced into this country about the same time as the last species, there are very few large specimens of it. It is chiefly used for the purpose of fuel, and soon becomes rancid, and hence probably the names of butter-nut and oil-nut. The wood is used in the districts where it grows for the same purposes as the last. Its bark contains considerable medicinal powers, and is used in the United States as a purgative, and for the cure of toothache.

It's leaves also are so aerd, that they are employed, when powdered, as a substitute for antimonials.

All the species of Walnuts are best propagated by the seed, which, when the tree is intended for ornamental timber, should be sown in the place where it is wished it should remain, as the large tap-root of these trees is likely to be injured by removing them, although with great care they may be successfully transplanted. When trees are to be grown for the purpose of obtaining their oil, the growth is increased by budding, grafting, and sometimes by layering.

The most approved successful mode of budding, and which is the one chiefly adopted on the Continent, is that with the flute method, in which an entire ring of bark, containing one quarter, is cut out and fixed to the upper extremity of the stock, which is also denuded of its bark; should the stock be larger than the ring containing the buds, the ring requires to be slit up, but if this extends the stock, a small portion requires to be cut off so as to make it fit. Mr. Knight also invariably succeeded in budding the walnut by using the minute buds that are found at the base of the annual shoots of this tree, which, as he says, "are almost concealed in the bark, and is barely seen. The practice is, however, to cut and cement the vascular bundle of the bud to the stock, by the use of the insertion of the large prominent buds which occupy the middle and opposite ends of the annual wood." (Selby.)

These he inserted on yearly stocks which grew in pots, the vegetation of which had been retarded by exposing them during the spring and early part of the summer in a northern aspect, until the above-mentioned buds were formed on the current year's shoots of the trees intended to be propagated, when the pots containing the young plants were brought into a forcing-house and there budded. There is no tree that requires less pruning than the walnut, and where large branches are cut off, it is almost invariably followed by a decay of the tree at the spot where abscission was performed. The best soil for the walnut is a light sandy loam, without manure, and almost anywhere, provided the soil is free from stagnant moisture. The best fruit is obtained from trees growing on calcareous soils.

Previous to the time of the publication of Nuttall's 'Genera of North American Plants,' the various species of North American trees called hickory were regarded as species of the genus Juglans. These Nuttall referred to a new genus, Carya. (Carya.) There is another species, formerly referred to Carya, and called J. flexuosa, which Kunth has made into a genus called Pterocarya. It differs from Juglans in its fruit having two wings, and in the embryo not being accompanied by albumen. It is a native of moist woods at the foot of the Caucasus, and hence called P. caucasica. It is a small tree with an ample bushy head, attaining a height of 30 or 40 feet. Its leaves are alternate, very large, commonly having 19 leaflets, which are oblong, deutilculate, with blunt teeth. Each of the leaflets has on the sides short teeth or papillae.

The term 'Ludlow's Arb. et Frut.' Brit. & Ireland, Michaux, North Amer. Sylva: Encyclopædia of Gardening' was published in 1832, and the text appears to be a collection of information about various species of plants, including walnuts and hickories.
W A L

Anne, had been notorious; and apart from political expediency, it became the duty of the ministers of the late king of the House of Hanover to denounce, and, if possible, extinguish the faction that had nearly succeeded in altering the succession to the throne. Walpole drew up the report on which the impeachment and trial of Sacheverel was decided. The preceding time brought on a severe illness. Before his recovery the memorable Septennial Bill, which had been prepared with his concurrence, was passed. It was perhaps scarcely justifiable on constitutional grounds to proceed with the impeachment during the summer. However, it was passed, and, as a protest against this procedure, he took a leading part in all the proceedings. The rebellion in favour of the Pretender soon afterwards broke out, in the midst of which Walpole was appointed first lord of the treasury and chancellor of the exchequer. He had not been long in the country when, in July, 1715, he retired to Chelsea, where he soon took up his residence. There he was kept in the utmost ignorance of all public events, and the Whigs in the meantime continued in power. He was roundly called a Jacobite, and once engaged in business with much activity, and joined the Whigs in promoting the Protestant succession. Although his first attempt at oratory does not appear to have been very successful, he soon displayed his ability as an able and practical debater and an acute politician. He attracted the attention of the great leaders of the Whig party; and in March, 1705, when their influence had risen in parliament and in the cabinet, he was appointed one of the council to Prince George of Denmark, the Lord High Admiral. In this capacity he showed much prudence and firmness under peculiar difficulties, that he won the esteem and confidence of Godolphin and the Duke of Marlborough. Henceforward he assumed a high position in politics. In 1708, on the death of the Whig secretary-at-war, the management of the House of Commons was entrusted to him by his party. In 1710 he was appointed one of the managers for the impeachment of Sacheverel. He had strongly opposed that proceeding in public controversy, but had been driven by the necessity of conducting it chiefly devolved upon him. He afterwards published a pamphlet, entitled "Four Letters to a Friend in North Britain upon the publishing of the Trial of Dr. Sacheverel." In which he laboured with the utmost talents and influence, that he vainly endeavoured to persuade him to accept a place in the new administration, and declared him to be worth half his party. Party spirit was then most virulent, and in order to crush their opponents the Tory government under Harley and St. John charged the ex-ministers with extensive corruption and inaccuracy in the public accounts. The defence of his colleagues was ably conducted by Walpole; but he was punished for his zeal on their behalf, by a similar accusation against himself published in the form of a pamphlet. On January 1712, a majority of the House resolved that while secretary-at-war he had been 'guilty of a high breach of trust and notorious corruption,' and that he should be committed to the Tower and expelled the House of Commons. He refused to manifest any submission, and remained a prisoner in the Tower until the prorogation. Meanwhile his friends looked upon him as a martyr to their cause, and flockcd to his apartments, which bode, it is said, the appearance of a crowded levée, rather than of a prison. He was re-elected for Lynn; but (in accordance with a doctrine afterwards declared illegal in the case of Wilkes) was declared incapable of sitting in that parliament. He did more for his vindication with his pen while in prison, than he could have done in the face of his enemies, who had already condemned him. A pamphlet published by him at that time was declared by his party to be a complete refutation of the charges affecting his character. Whether this be so or not, his exertions added to his distress and not unlike increased his influence. At the dissolution, in August, 1713, he again entered parliament as member for Lynn, and took a distinguished part in all the debates and in the proceedings of the investigation of the irregularities and corruptions of his party. On the accession of George II., Walpole, with his brother-in-law Viscount Townshend, had a principal share in the formation of the Whig administration. He was himself appointed paymaster-general of the forces and of the land office. The disunion of 1715 having formed a large majority for the Whig ministry, they had an opportunity of averting themselves for the prosecution they had suffered from their predecessors in office. The intrigues of many of the leading Tories in favour of the Pretender during the last four years of the reign of Queen
was created a Knight of the Bath, and in 1726 was installed a Knight of the Garter. But though strong in parliament, and standing well with the king, Walpole was continually in danger from the intrigues of the court. On the accession of George II., however, Walpole was so fortunate as to find a protector in Queen Caroline, whose influence and successes of his first years in office, although a change had been determined upon, and afterwards to support him against the persevering machinations of all parties.

To follow Sir Robert Walpole through the events of his long career, and not require little less than a history of his times. There were no important debates in parliament, no deliberations in the cabinet, no negotiations with foreign states, in which he did not bear the most considerable part from the first day of his administration. The most remarkable measure proposed by him was one that caused perhaps the most contempt to his talents as the minister of a commercial country, was his Excise scheme, brought forward by him in 1733. The object of this measure was to convert the Customs duties payable upon certain articles of import immediately on their arrival in port, into Excise duties payable on taking them out of warehouses, for home consumption. He also proposed to confine the taxed commodities to a few articles of general consumption, and to exempt from the Excise all the necessaries of life and all the raw materials of manufacture. The plan itself and the arguments by which he supported it prove the soundness of his views of taxation and commerce; but unhappily the measure was artfully misrepresented as a scheme to burden the people, and was opposed by the able writers opposed to the minister, by the clamours of those interested in existing abuses, but more than all by the unpopular name of 'Excise,' were almost unanimous in its condemnation. Public feeling became at length so strong, on both sides, that it seemed by threaten any further progress with the bill; and Sir Robert was very reluctantly obliged to abandon it. He was fully persuaded of its great advantages to the country, but said, 'I will not be the minister to enforce taxes at the expense of public comfort.'

In 1737 the influence of Walpole was much shaken, first by the quarrel between the king and the Prince of Wales, and the avowed hostility of the latter to the king's government, and especially to Walpole, who had been chiefly consulted by the king; and, secondly, by the death of Queen Caroline. The high regard of the queen for Walpole was testified even on her death-bed. Turning to the minister, with whom the queen was standing by her bedside, he said: 'He who was the king's constant minister, but continue to serve him with your usual fidelity,' and addressing to the king, she added, 'I recommend his majesty to you.' Shortly afterwards the king showed Walpole an intercepted letter, in which it was affirmed that the minister had been seduced from his professions. It is false, said he; 'you remember that on her death-bed, the queen recommended me to you.'

Walpole was soon in the midst of great embarrassments. The king, the people, a strong minority in the Commons, a majority in the Lords, a popular outbreak in the cabinet, were eager for war with Spain. Walpole endeavoured to avert it as a national calamity, but was overpowered by the union of so many parties in its favour. He then felt how much his popularity had suffered from his opposition to them or domestic, during the last two years. It was unjust to his charge. He entreated the permission of the king to resign, but his majesty exclaimed, 'Will you desert me in my greatest difficulties?' and refused to accept his resignation. In the midst of the discussions upon the Spanish war, a motion was made for a general repeal of the Excise; and the country, beholding those talents in debate and personal influence became a serious obstacle to his measures. Discord ensued in the cabinet, and the opposition in parliament became more strenuous than ever. In February, 1740, a motion was made in the Commons, and with so much success that the motion, which was the revocation of Sir Robert Walpole from his majesty's presence and counsels for ever. No distinct charges were made against the minister to justify so strong an address; but every complaint against the measures of his government, foreign or domestic, during the last two years, was given as a reason for his dismissal. 'If it should be asked,' said Sandy, 'why I impute all these evils to one person, I reply, because one person grasped in his own hands every branch of government; that one person has attained the sole direction of affairs, monopolized all the favours of the crown, commanded the disposal of all places, pensions, titles, ribands, as well as all preterments civil, military, and ecclesiastical.' Walpole defended himself with becoming boldness and dignity, and referred with pride to his administration. The motion was carried by a large majority, and a similar motion in the House of Lords met with the same fate. But, notwithstanding this triumph, his power was nearly exhausted. A resolution immediately followed; his opponents were at the election. He himself had been indulgent of success, and on the meeting of the new parliament he found himself in a bare majority. After several close divisions, he was, on the 2nd of February, 1742, left in a minority of sixteen, on the Chippenham election. On the 9th, all events led the Earl of Orford by the king, and on the 11th he resigned. On taking leave of him the king burst into tears, expressed his regret for the loss of so faithful a counsellor, and his gratitude for his long services.

No sooner was a new administration formed under Pulteney (which, through the influence and address of Walpole, had been composed chiefly of Whigs,) than an attack was made upon the ex-minister. On the 9th of March Lord Limerick moved a committee to inquire into the administration of Sir Robert Walpole during the last twenty years, but his motion was lost by a majority of two. Lord Limerick very soon made a second motion, but proposed to include only the last ten years in his inquiry. It was defeated by a minority of seven, and a committee of secrecy was appointed. Of the twenty-one members of this committee, nominated by ballot, all except two had been Walpole's uniform opponents. The committee, failing to obtain the evidence of corruption which he had expected, endeavoured to pass a bill of indemnity to all persons who would make discoveries, but this invidious and unjust measure was rejected by the House of Lords. The committee nevertheless made a report, in which they charged Walpole—1, with having used the influence of the public service to apply grants of fraudulent contracts; and, 2, with peculation and profusion in the expenditure of the secret service money. These charges were but ill supported, and considering the clamours that had been raised against the minister, the decided enmity of the committee, and the ample means at their disposal, the report must be regarded, if not as a verdict of acquittal, at least as one of not proven. A motion for renewing the inquiry was rejected by the following week, for Sir Charles Lyttelton's motion, which was permitted to pass a bill of indemnity to all persons who would make discoveries, but this invidious and unjust measure was rejected by the House of Lords. The committee nevertheless made a report, in which they charged Walpole—1, with having used the influence of the public service to apply grants of fraudulent contracts; and, 2, with peculation and profusion in the expenditure of the secret service money. These charges were but ill supported, and considering the clamours that had been raised against the minister, the decided enmity of the committee, and the ample means at their disposal, the report must be regarded, if not as a verdict of acquittal, at least as one of not proven. A motion for renewing the inquiry was rejected by the following week, for Sir Charles Lyttelton's motion, which was sumptuous, and supported by the House of Lords, having observed to his brother that he had left his to treat with the Commons, and, as they were suffering from the stone, which be bore with admirable fortitude, he died on the 18th of March, 1745, in the sixtieth year of his age, and was buried in the parish church at Houghton.

The character of no public man has ever been more misrepresented than that of Walpole. He had the misfortune to be actively opposed by the first wits of his day. The brilliant talents of Bolingbroke, Chesterfield, Swift, and Pope filled the press with sarcasms, and mis-
courage it. The extremely difficult circumstances in which Walpole was placed by the claims of the Pretender and the unpopularity of the House of Hanover, must also be pleaded in his justification. His zeal for the Protestant succession was certainly the main principle of his political life and administration. The same great authority who vindicated him from the charge of systematic corruption thus sums up his services:—"The prudence, steadiness, and vigilance of that man, joined to the greatest possible lenity in his character and his politics, preserved the constitution and the family: and with it their laws and liberties to this country." (Burke's "Appeal from the New to the Old Whigs," p. 63.) In private life he was distinguished by his hearty good nature and social dispositions. His conversation and manners were not coarse and indelicate, but had the happy art of making friends, and great powers of persuasion. For business of all kinds he had an extraordinary capacity, and the ease with which he executed it led Lord Hervey to say, "Mr. Walpole finished the same ease and tranquillity as if he was doing nothing." (Coxe's "Memoirs of Sir Robert Walpole; Smollett's "History; Tindal's "Continuation of Rapin; "Historical Register; Political State of Great Britain; Chandler's "Life of Sir Robert Walpole, his Autobiography." "WALPOLE, HORACE (Earl of Oxford), an ingenious and accomplished writer of the last century, was the third and youngest son of Sir Robert Walpole, by Catherine Shorter, his first wife, and was born October 5th, 1717. When he had finished his education at Eton and Cambridge, he left England and travelled on the Continent for more than two years. For the greater part of this time he was accompanied by Gray, the poet, with whom he had formed a friendship at school; but a difference of political opinion arose between them, and they parted at Reggio, in July, 1741, and returned to England by different routes. On his return home in September, 1741, Walpole took his seat in the House of Commons for the time being, and was returned as a Member for Callington, for which place he had been elected during his absence. At his return, his father's administration was at that time in the midst of the difficulties which shortly afterwards caused its downfall, and he could not fail to be deeply interested in all that passed. He did not however take any prominent part in the debates. His first speech was delivered in March, 1742, on a motion for inquiring into the conduct of Sir Robert Walpole for the preceding ten years of his administration, and was favourably noticed by Mr. Pitt, afterwards Lord Chatham, and by Steele, in his "Hog of a Time." Bishop Berkeley is quoted as observing that the interest excited by his father's affairs had subdued, he was very rarely induced to address the House. He moved the address in 1751, and spoke in 1756 on the question of employing Swiss regiments in the colonies. In 1757 he expressed in a letter to his friend Mr. Pitt his sympathy with the unfortunate Admiral Byng. These are the chief events of his public life, although he remained in parliament till 1768, a period of twenty-eight years. In 1744 he had exchanged his seat for Callington for Castle Rising; and from 1744 he represented King's Lynn, the borough which had returned his father for many years to parliament. Public life was not suited to Horace Walpole's pursuits and tastes, but he was always much interested in politics. His family connection had early identified him with the Whig party, but his speculative views were more elevated, and he devoted his reverence for popular rights and his affected hatred of kings, to the engraving of the death-warrant of Charles I., and wrote upon it, "Magna Charta." He was a master in the art of abstract opinions and to lead him into any practical extravagance, for his habits and temper of mind were fastidiously aristocratic.

The principal amusement and business of Walpole for many years of his life were the building and decoration of his house at Strawberry Hill. This house was originally a small cottage, which he purchased in 1747, but grew under his hands into a so-called mansion of considerable extent. It would be difficult to compliment his taste in architecture, but the Gothic style was not at that time in vogue, and many faults and absurdities which are now apparent at Strawberry Hill must be referred to the novelty of the attempt to apply to a modern domestic residence the characteristics of an antique style. He collected works of art and curiosities of every description to ornament his house and gratify his tastes—prints, pictures, miniatures, armour, books, and manuscripts. He was enabled to indulge in these expensive pursuits by the profits of three income offices which his father had obtained for him, viz. usher of the exchequer, comptroller of the pipe, and clerk of the estreats.

To the tastes of a virtuoso he added those of a man of letters. His earliest compositions were in verse, and though many of them are sprightly and agreeable, they are not imaginative, and even but slight for versification. In 1752 he published his "Ades Wal- polei," which contains a work of great value being in fact a catalogue of his father's pictures at the family-seat of Houghton Hall in Norfolk; but, like other literary works of the same author, it was consistent with his favourite pursuits: the curious literature of the family.

In 1761 he commenced the publication of "A Catalogue of Painting in England," which were not completed until 1771; and in 1763 he added a "Catalogue of Engravers." Both these works were founded upon materials supplied by the circle of his family, and were finished with such a happy style of writing, for which he is remarkable.

Walpole's celebrated novel, the "Castle of Otranto," appeared in 1764, as a translation, by William Marshall, from the Italian of Osippphio Muralto, which the author is stated to have founded upon an incident in the life of Newby, in a new style, exciting various opinions at the time, but it was, on the whole, eminently popular and successful, and is still read with interest as one of our standard works.

In the opinion of Sir Walter Scott, the "world's most singularly entertaining and universally admired work," in his character of a historical agent with human interest, to a tone of feudal manners and language, sustained by characters strongly marked and well discriminated, and to unity of action, produces a real sensation, and a grandeur and noble simplicity, in fine, which cannot be denied to him, who can exalt the passions of fear and pity, must be awarded to the author of the "Castle of Otranto."" Lord Byron goes even further in his praise, and calls the "Castle of Otranto" the last romance in our language, and the debate on it he says was the most entertaining of all Walpole's writings. His letters, addressed to various friends, collected by himself, and published at different times since his death, Walter Scott calls him the best letter-writer in the English language, and Byron speaks of his epistolary talents as "reserved and unassuming, and must be placed upon them as an historical work, for the author's prejudices and political partialities are too open to entitle his evidence or judgment to much weight.

But the first love was not certainly the most entertaining of all Walpole's writings: his letters, addressed to various friends, collected by himself, and published at different times since his death, are the best letter-writer in the English language, and Byron speaks of his epistolary talents as "reserved and unassuming, and must be placed upon them as an historical work, for the author's prejudices and political partialities are too open to entitle his evidence or judgment to much weight. But the first love was certainly the most entertaining of all Walpole's writings: his letters, addressed to various friends, collected by himself, and published at different times since his death, Walpole Scott calls him the best letter-writer in the English language, and Byron speaks of his epistolary talents as "reserved and unassuming, and must be placed upon them as an historical work, for the author's prejudices and political partialities are too open to entitle his evidence or judgment to much weight. But the first love was certainly the most entertaining of all Walpole's writings: his letters, addressed to various friends, collected by himself, and published at different times since his death, Walpole Scott calls him the best letter-writer in the English language, and Byron speaks of his epistolary talents as "reserved and unassuming, and must be placed upon them as an historical work, for the author's prejudices and political partialities are too open to entitle his evidence or judgment to much weight.
have been the work of a man of the highest talent; but a less exalted opinion is necessarily formed of the man, when we discover that the ease and freedom of style which he has so successively entrapped into admiring as natural, were the result of laborious care and study. He has always in mind the art of selecting anecdotes, and dressing up epigrams which he afterwards inserted in his letters as if they had occurred to him at the moment. Many of his letters were published in the first edition of his works in 1798, and subsequently his letters to Mr. Macpherson, to the Rev. Lord Hertford and the Rev. Henry Zouch, and lastly to Sir Horace Mann, have appeared in different times. The last are the most valuable and complete collection for reasons of fact, by their accuracy, and Lord Whittworth's preface to that correspondence. ‘Sir Horace’s constant absence from home, and the distance of his residence (at the court of Tuscany) from the British islands, made every occurrence that happened acceptable to him as news. In consequence, his correspondent relies on him everything that takes place, both in the court and in society, whether the anecdotes are of a public or private nature, and hence the collection of letters to him becomes a most exact chronicle of the events of the day, and elucidates very amusingly, both the manners of the time and the characters of the persons then alive.’ The whole of the letters of Horace Walpole have since been collected, and were published, in 1840, in six volumes, octavo. This series comprises a period of more than sixty years, from 1735 to 1797.

Horace Walpole had not been contented with collecting rare and curious books and publishing his own works, but, still further to gratify his literary tastes, he established in 1757 printed the Odes of Gray with Bentley’s illustrations; his own ‘Anecdotes of Painting; a Description of Strawberry Hill; a quarto edition of ‘Lucan,’ with the notes of Godwin and Bentely; a ‘Life of Lord Herbert of Cherbury,’ by himself; Hentzner’s ‘Art of Painting,’ and Lord Whittworth’s ‘Account of Russia.’ He had also, so early as the year 1768, formed an intention of printing a quarto edition of his own works, which he soon afterwards commenced. But he had time to complete only the second volume, in consequence (as his editor, in 1798, says) of the order in which he had used the title when he could avoid it. Some of his letters after that period were signed by ‘the uncle of the late Earl of Orford.’ He lived for six years afterwards, in the full possession of all his faculties, though his limbs had been long attacked by gout, which, however, did not prevent his being able to carry on his literary labours. He died in the 80th year of his age, at his house in Berkeley Square, on the 2nd of March, 1797.

Horace Walpole cannot be regarded either as a wise or as a great man. Weakness, vanity, and inconsistency were prominent features of his mind, and his works do not prove it to have been susceptible of great elevation of thought or principle. He had a natural taste for small and trifling art, and he was particularly fond of the business of life; but then it is true that he always professed to be a gentleman of ease and fashion, whose literary efforts were undertaken not for fame, but for recreation. He affected to disclaim the character of a man of letters, and he was acutely sensitive to criticism, greedy of praise, and envious of the fame of others. He pretended to despise the court, yet all his thoughts were of kings, princes, and courtiers. He was a republican and an aristocrat. His own theory of literature was that a novel was a gentleman’s essay, a man of letters is a gentleman of arms. He was not content to assume it. In private life he showed no remarkable virtues, nor is he chargeable with any serious faults.

The living of Walsingham is a vicarage, of the clear yearly value of 363l., with a glebe-house; the perpetual curacies of St. Paul and Bloxwich are of the clear yearly value of 50l. and 142l. respectively; Bloxwich has a glebe-house. The value of Walsingham Wood is not given. All are in the

rural deanery of Tamworth and Tutbury, the archdeaconry of Stafford, and the diocese of Lichfield and Coventry.

There were in the parish, in 1833, one infant-school with 35 boys and 36 girls; twenty-one other day-schools, with 702 boys and 712 girls; making a total of 1293 children or about one in twelve of the population under daily instruction. One of the day-schools was an endowed grammar-school with 60 boys; another an endowed English school with 54 boys; two were national and blue-coat schools, with 194 boys; and the others were partly supported by endowment or subscription, and one by a grant from the grammar-school. Four
day-schools were also Sunday-schools, with 298 boys and 242 girls; besides, four of these were other schools for children, with 670 boys and 526 girls; making a total of 1738 children under instruction on Sunday. There are some almshouses and several charitable bequests for the poor of the town. Races are held about Michaelmas, and assizes at the constabulary. (Rickman's

Gothic Architecture: Partly on the

WALSAM, NORTH. [Norfolk.]

WALSAM, NEW AND OLD. [Norfolk.]

WALSAMING, or WALSAMINGHAM, THOMAS, an English coal-miner, and the key period in the life of the fifteenth century, was a marriage of convenient interest. Bishop Nicolson conceives that he was 'very likely a proximus juris professor of history in that monastery about the year 1440.' He is the author of two historical works, one written in French, the other, 'Hystoria Brevis,' ab Edwardo primo ad Henricum quintum' ('it extends in fact a.d. 1273, the first year of Edward I., to 1422, the last year of Henry V.); the other, 'ypodium Neustriae, ab ibi annum 6 regni Henrici quinti' ('A.D. 1418). Both these works were published together by Archbishop Parker, in folio, at London, in 1574. Both are also contained in Camden's 'Anglica, Normannica, Hibernica, Cambriae a Varibus Scoticis, Normannis, et Frans, et Libris de Historia Brevis,' from p. 57 to 408; the 'ypodium Neustriae, from p. 409 to 592. Walsingham, in his 'Hystoria Brevis,' takes up the narrative from the point where Matthew Paris ends; and he might well, Nicolson observes, 'seem to be Parties at the Constanta,' his language answerable to his matter.' But although his style is not to be commended, Walsingham has in both his works preserved many facts which are not elsewhere to be found. His account of the reign of Edward II., according to Nicolson, is wholly based on Sir Thomas de la More Moor, a contemporary writer, who drew up a Life of Edward II. in French, of which there is also a Latin translation in Camden's 'Anglica,' Sec., pp. 593-693.

Or WALSAMINGHAM, SIR FRANCIS, an English statesman of distinguished ability, was descended from an ancient family, and was born at Chiselhurst, in Kent, where he is commonly stated in the year 1536. The authority for this date we believe to be an account, transmitted by a correspondent to the publishers of a work called 'British Biography,' vol. iii., svo., London, 1767, of an original picture of Walsingham painted in 1578, making him then forty-two years of age. (See note to p. 286.) He was the third and youngest son of William Walsham, Esq., of Sevington, in the county of Kent, and Ann, daughter of John of Joice, daughter of Edmund Denny, Esq., of Cheshunt in Hertfordshire.

After studying at King's College, Cambridge, Walsingham went to travel on the Continent; and he remained abroad, making active use of his knowledge of the state of foreign countries and acquiring their languages, till after the accession of Elizabeth. On his return to England his accomplishments recommended him to the notice of the profession under whose hands he was soon introduced to high and confidential employment in the public service. His first important mission is generally assumed to have been to France in the earlier part of the reign of Charles IX., but nothing further is known of it than what is stated in the letter of recommendation (mature jam estate) he was Queen Elizabeth's orator, or representative, at the court of the king of France (apud

Galium), for several years, in a most turbulent time. But it does not appear why the words in the epigraph may not refer to what is generally called Walsingham's second French embassy, upon which we know that he was sent in August, 1572, and returned, with all his attendants, in 1573. On his return home he was appointed one of the principal secretaries of state and sworn of the Privy Council; and soon after he was knighted. In 1578 he was sent as ambassador to the Netherlands; in 1581 again to France; and in 1582 to Scotland. In October, 1583, he appears to have still occupied himself chiefly with the conduct of foreign affairs, and it must have been in that year that, if we are to believe a story which is commonly told, he retired to his castle, the preparations of which were made by the Spanish Armada, by getting the bills upon which the money was to be raised protested at Genoa, through the agency of Sutton, the founder of the Charter House, having previously discovered the design of the King of Spain in pressing upon Eber armament by having the effect of his majesty to the pope, in which the secret was intended, stolen from the cabinet in which it was looked up, though the medium of a Venetian priest retained as his spy at Rome, who got a gentleman of the bedchamber to take the key out of his hand, and was put to death. Such a proceeding, strange as it now sounds, was not at all foreign to the spirit or practice of the statesmanship of that age, and was quite after the manner of Walsingham, whose whole system was founded upon and maintained by money. There can be no doubt that, in reference to his policy, he was an excellent man. He had a great respect to the extension of popery by any means whatever, and thought that, in the end, it was the only way of recovering the English crown. He believed the monarchy to be united, and the crown to be the key of all power and authority. He would not have any heretics in the land, and believed that, if there were but a few, it would be a great joy to him, says his warm admirer and panegyrist, Lloyd, 'men's faces spake as much as their tongues, and their countenances were index of their hearts. He would so beat the nation that no one was left to have the name of Norman. He discovered whether they answered or were silent. He outdid the Jesuits in their own bow, and overreached them in their own equivocation and mental reservation; never settling a lie, but warily drawing out and discovering truths. He was a thorough man, a medium between the minister of the popish church and that of the Protestant church, and a favor to most of the papists before their death, as they had been to their brethren before their treason. He maintained fifty-three agents and eighteen spies in foreign courts; and, for two pistols an order, had all the private papers on. He could write his contents without touching the seals.'

For all this, Walsingham was the very reverse of a man of mere policy and expediency. His principles were so fixed and distinct, that his morality was strict, to the verge of asceticism; his religious zeal drew him all his life towards puritanism, and in his latter days he led his life like a monastic, and in his last days it was with a devotional spirit that he retired from business, and to have spent his time, with little or no society, at his house at Barn Elms. Here he died on the 6th of April, 1590. He was,' says Camden, 'one of the most steady asserter of the reformed religion, endured well the intrigues of government and as well as they could, and improved the good affections of the people, so as to serve his own turn; insomuch that his quickness and dispatch of business made him be considered by the queen as a man that ever outdid himself; and the papists, against whom he had so many enemies, and among these, that intelligence and penetration, and so dexterous at finding out their tricks and designs against religion, his prince, and country, that they complained of him as a very useful and insidious man. Indeed, he watched the practice of those favours, and connived at his estate by that means, and brought himself so far in debt, that he was buried privately by night, in St. Paul's Church, without any manner of funeral solemnity, 'Elizabeth, who had a high opinion of his sagacity in public and important services, seems to have kept him throughout his life on short allowance. Even of honours, if we except his knighthood and the offices to which he was appointed, he had none. Camden says he was a Knight of the Garter, and has only alluded to the matter, it was supposed, because it was an unsual one. We believe it is unfounded.

Walsingham was married to a lady of the name of St.
Barbe, and by her he left one daughter, Frances, who became successively the wife of Sir Philip Sydney, of Robert Devereux, the unfortunate Earl of Essex, and of the distinguished soldier Richard Burch, created by Charles II. Earl of St. Albans in the English peerage, but better known by his inherited Irish title of Earl of Clanmellie. She died, after bringing her last husband a son, in 1602.

The history of Walsingham’s French embassy of 1670–1673 is contained in Sir Dudley Digges’s ‘Complete Amb-}

mation’ of the intended marriage of the Queen Elizabeth, of glorious memory; or, comprised in letters of negotiation of Sir Francis Walsingham, her resident in France; together with the answers of the Lord Burleigh, &c., folio, Lon., 1635. There is a short paper by Wal-}

singham to his ‘Monomachia’ (c. 1556), saying that directed against Walther were unfounded, though it appeared that the Wittenberg edition was sometimes incorrect, a reproach however to which the Jena edition was likewise liable. Another polemical pamphlet of Walther was, 1, ‘Antwort auf die Flacianische Lügen und Bilche. Berlin, Wittenbergische Tomia der Bücher des ehrwürdigen Martin Luthers, wider Matthes Flacian Ilyrium,’ Wittenberg, 4to., 1656. Mayerus, in his work ‘De Versione Bib-}

liothecis Catholicarum’ (c. 1583), says that the edition cited, directed against Walther, was not the later ones, but the one from 1550. Also, 2, ‘Bericht vom Unterricht der Biblen und anderer Bücher Luthers,’ 3, ‘Register aller Bücher und andere Schriften Wittenbergs in deutscher Sprache.’

WALCHER, JOHANN GOTTLIEB, a celebrated anatomist, was born at Königsberg in 1739; the ‘Biographie Universelle’ says of the year 1800 specimens, the result of the dissection of upwards of 8000 dead bodies. He wrote several works on various departments of anatomy and midwifery. In addition to numerous essays and papers, he published the following works:—‘A Treatise on the Bones of the Human Body’ (translated into Latin by Dr. Rothen Knochen), Berlin, 1762, 8vo.; ‘Observationes Anato-

micae,’ Berlin, 1775, fol.: ‘A Manual of Myology’ (‘Myologisches Handbuch’), Berlin, 1777, 8vo.; ‘On Diseases of the Abdomen and on the Anatomy of the Bones of the Sphinters and of the Schlaglgress,’ Berlin, 1785, 8vo. Of these the anatomical works have gone through several editions, and his miscellaneous papers are valuable contributions to medical science.

‘Bibliographie Universelle: Neueste Conversations-Lexicon; in both of which a list of his numerous works and papers is given.’

WALTHAM ABBEY. [Essex.]

WALTHAM, BISHOPS. [Bishop’s Waltham.]

WALTHAMSTOW. [Essex.]

WALTHER, CHRISTIAN, was probably born in Hesse, in the beginning of the sixteenth-century. He studied divinity, took orders, and lived a considerable time in a convent of monks, in which he was much injured. He afterwards left his convent and adopted the Protestant religion. Having settled at Wittenberg, he became acquainted with several of the great Protestant divines of the sixteenth century, and was4

recommended by them to his present instructor (Professor Barenbruch), and Asmuth, who esteemed him for his extensive learning. He also became acquainted with the celebrated printer Hans Lufft, in whose office he was employed as corrector of the press for thirty-four years. He was the author of several books of divinity, among which the most remarkable are ‘Protestantische Lieder’ (1785), which edition was attacked by the divines assembled at Jena for the purpose of publishing another edition; they charged Walther with having purposely altered several passages so as to make them an instrument in the hands of the Calvinists for their attacks against Luther. The celebrated Asmuth (the bishop) attacked Walther in a pamphlet entitled ‘Das die zu Wittenberg und andern Theilen der Eucharistia im Buache, dass die Worte, das ist mein Leib, noch stet sithe, mehr denn ein Blut und 4 gantz Paragraphes vorlettzlich ausgewlassen haben.’ He was likewise attacked by Flacius. Walther went out of the man to prove such passages in silence; he defended himself in a pamphlet, ‘Bericht vom Untersuchung.’

WALTHER, or GUALTERUS, RUDOLPH, was born at Zürich in 1519. After having studied Protestant divinity in several schools in Switzerland, he went to Marburg in Hesse, and made himself known as a learned divine and an able negotiator in those politico-theological transactions which, according to the circumstances, either embittered or quieted Germany. He accompanied the landgrave, Philip the Magnanimous, of Hesse to the diet of Regensburg in 1541, and, although he was rather young, the landgrave put him at the head of the Hessian divines who were present at the diet. At Regensburg, Walther made the acquaintance of Melanchthon, Bucer, Sturm, and other eminent theologians. He returned to Switzerland in the same year, 1541, and was appointed head master of the Schola Carolina at Zürich.

The principal works of Walther are: 1, ‘Apologia Zwinglii.’

Walther became soon an adherent of Zwingli, and more than once attacked Luther. 2, ‘Monosxochia Davidis de Goliath’ (1541), a poem written by Erasmus and translated into Latin by Walther, ‘Epitomatum Novum Testamentum,’ published by Josias Simler, the divine, Zürich, 1594, fol. He has also written, 4, ‘Homiliae in Joannis Epistolas; in 12 Prophetae Minores; in Christum in Mabathum; in Lucam; in Acts Apostolorum; in Epistolam ad Romanos; in Epistolam ad Corinthisios; in Epistolam ad Galatas;’ and a great number more. 5, ‘Argumenta omnium tam Veteris quam Novi Testamenti Capitum’; the author has made these arguments the subject of an elegiac poem, written in Latin verse. 6, ‘Nabales, Comedica Sacra ex Samuele, I. c. 25;’ and several other Latin poems, among which there is one on the learning of the German nobility. 7, ‘Apologia ad Catholicae Ecclesiae pro Ulrico Zvinglii, episcopi Dubendorfensis,’ 8, ‘Testae toctae, cum Argumenta, Dispositionibus, et Explicationibus;’ 9, ‘Ulrici Zwinglii Libri XXIV;’ this is a Latin translation of Zwingli’s sermons and other writings.

Wanhauptig Bekümmernissen der Kirche und ihrer Verteler, der bisher gegebührnder Antwort auf Lutheri Verdamnnisse und Schelten,’ in German and Latin. Walther’s name is mentioned among the most eminent German divines of the sixteenth century. Some say that the Latin of the ‘Verdamnnisse’ and of the ‘Psalter’ (translated by Valtebius, who was also the author of the ‘Guteleb’, who died in Paris in 1547, and who translated some books of Aristotle) is made by Walther.

(Verheiden, Prostamentum aliquot Theologorum qui Romanum Antichristum crestitse opponuntur, Elygiae, Logica, Opera; p. 251, &c.; Jochen, Allgemeines Ge-}

WALther, Michael, born in 1593, was the son of John Walther, a rich merchant and patrician at Nuremberg, who intended to bring his son up to his business, for which purpose he sent him to a rich merchant at Thas in Bohemia. Young Walther however disliked trade, and his father had him educated for a scholar. In 1610 Walther went to the university of Wittenberg, where he first studied medicine, but he afterwards pursued theological studies at Giessen, Altdorf, and Jena. In 1618, Elizabeth, duchess of Saxony, settled him at Jena, and in 1621 her son, Duke Julius Frederic, gave him a chair of divinity in the university of Halle. In 1626, Rudolph Christian, sovereign count of Oestriechland, conferred the dignity of divinity to the superintendent of the Lutheran church in his dominions. Several distinguished works on divinity which he published during the course of these years had made his name known in Germany, and the universities of Rostock and Wittenberg both offered him a chair of divinity, which however he declined.

However, in 1642 he accepted an invitation of Frederic, Duke of Brunswick-Luneberg, who appointed him general superintendent of the Lutheran church in his duchy. He died at Zelle, on the 8th of February, 1652. His principal works are: 1. ‘Harmonia et Logica Salomonis,’ 2. ‘Of. Clara Bicha,’ Nuremberg, 1636, 4to.; 3. ‘Theoriae et Practicae illuminatae,’ 4to.; 4. ‘Tractatus de Manna, Leiden, 1633, 12mo.;’ 5. ‘Exercitationes Bibliicae,’ Nuremberg, 1638, 4to.; 6. ‘Quadragesimae Miscellaneum Theologicum, this book was the forerunner of—7. ‘Centuria Miscellaneum Theologicum, 8. Giessen, 1646, 4to. In which the author discusses one hundred difficult questions concerning divinity. Similar works are: 8. ‘Liber singularis Quaestorum et Responsorum Theologicum, per epistolas;’ 9. ‘Spiegell Controversiarum illustrissimorum, per XXII. de Dei Nominibus;’ 10. ‘Postilla Mosicae, oder Erklärung etlicher Historien, Fürbilder, und Sprüche aus den fünf Büchern Moses;’ 11. ‘Postilla Evangelica;’ 13. ‘Der Gudelse Schlüssel des Alten, und der samt Kern des Neuen Testaments, der richtliche Erklärung der Sechzehn. Epistel S. Pauli an die Hebräer;’ this book was much esteemed. The learning of Walther was unanimously acknowledged, but the length of his works and his want of taste in the arrangement of his materials were condemned. Walther had a son, called Michael Walthers, like his father, who was born at Aurich in 1638, and who became professor of mathematics, and afterwards, of divinity, in the university of Wittenberg, where he died in 1692. He published works in various fields of mathematics and divinity. The principal are: 1. ‘Disquisitio Mathematica de mutuis Siderum Radiamionibus quas vulgo Aspectus vocant, Wittenberg, 1660, 4to.;’ 2. ‘De Harmonia Musicae,’ 3. ‘De Legissima Operis contra Socinians et Armignians;’ several dissertations on cones, the golden number, the torrid zone, on geographical longitude, 


Walther, Georg Christoph, a German and a consul, was born in 1601, at Rothenburg, formerly a imperial town on the Tauber in Franconia, and 1618 he went to Sondershausen, where he took his degree in law in the university of Altdorf. In 1631 the senate of his native town appointed him president of the chancellery of justice, which office he held till his death, in 1686, in 1645 he was made professor of public law of Germany, several princes and other members of the circle of France who employed him as their representative during the different diplomatic transactions which either preceded or followed the peace of Westphalia, in 1646. Walther was a member of the Academy of St. Statu, Juribus et Privilegia Doctorum; 3. ‘De Meta et Hostipationibus Militaribus;’ 4. ‘De Remuneratione Successionum vel Haereditatis;’ 5. ‘Harmoniae Theologiae-Juridico-Politico-Philosophica,’ which was published after his death.


Walther, Christian, a German divine ofconsiderable merit, was born in 1653, at Nottwig, not far from Königsberg, where he began his academic studies, which he continued at Leipsig, and finished at Jena. He took his degree of M.A. at Jena, in 1677, and returned to his native country, where he held several ecclesiastical offices. In 1705 he was appointed professor of divinity in the university of Jena. In 1746 he was invested with the office of inspector of the synagogu of the Jews in that town. During some time he was rector of the magnificent university of the kingdom of Königsberg, where he died in 1717. His principal works are: 1. ‘Tractatus de Cultu Divino sanctiuretis Vercenenti, quem stano sub episcopatbat;’ 2. ‘De Duabus Tabulis Lapidatis;’ 3. ‘De Quatuor Foenarum generis subd Hebraeos;’ 4. ‘Dispinitions VIII. de Plurilitate personarum in Divina, ex Genesis;’ 10. ‘Dispinitions III. de ingresso Sacerdote colonae Foenarum dion In knitting t ignorch saecularis, Emendatio, Salomonis, Inscrip. Programmat A. V. de Semine Abrahæ in qua benevolent Omnes Gentes.’ Walther also published the beginning of the work of Moses Maimonides on Circumcision, with notes and a Latin translation.

(Jecher, Allgemeines Gelehrten-Lexicon.)

Walther, Heinrich Andreas, born in 1606 at Königsberg in Hesse, became minister at Woms in 1729, and in 1733 he was appointed minister at St. Catherine’s, in the town of seventeenth century. He was a member of the Protestant clergy at Frankfort was conferred upon him, and in the same year the faculty of Giessen created him doctor of theology. He died at Frankfort in 1743. His principal works are: 1. ‘Disputatio ex Anti-Quaesturis, Ordinis;’ 2. ‘De Harmonia et Logica Salomonis, Emendatio, Giessen, in 1729; 3. ‘Programmat A. V. de Semine Abrahæ in qua benevolent Omnes Gentes.’ This book has been imitated by several later writers, and has given birth to an excellent work for the use of children, entitled ‘Lehren der Weisheit und Glaubens durch die bibelweisen Kinder, and accompanied with a preface the Frankfurter Catholichs.’

Walther, Christoph Theodousios, was born at Schildberg, in Brandenburg, in 1659, and studied divinity at Hall, 1722, and Frederic IV, king of Denmark, applying to the faculty of Halle for the purpose of obtaining some young theologians who would go as missionaries to the Danish possessions in East India, Walther accepted the invitation, and arrived at Ceylon, 1725, accompanied by Henry Plittschow and the celebrated Bartholomew Ziegenbalg. They arrived at Tranquebar on the 9th of July, 1706, and until then the Danes had not succeeded in propagating Christianity beyond those limits of their possessions, The Walther, accompanied by Portuguese, with Tamul and several other Indian dialects, visited the whole coast of Coromandel, and his pious zeal was rewarded with great success. He founded the missionary establisment.
WALTON, A genius of plants belonging to the natural order Sterculiaceae, the name of which is intended to commemorate three individuals who have contributed to the advance of botanical science: A. F. Walther, formerly professor of medicine in the University of Leipzig, who published, in 1720, a work containing descriptions of trees and shrubs. Walton, an English botanist and author of the "Flora Caroliniana," published in 1738; and Richard Walton, who accompanied Lord Anson in his voyage round the world in 1740-1744.

The genus is known by possessing a 5-angled calyx, furnished with a lateral 1-3-lobed deciduous involucre; 5 petals; a single style with tuberculated or pencilled stigma; a 1-celled, 2-valved, 1-seeded capsule. The species is a small tree or shrub. The flowers are yellow, the flower heads in axillary or terminal stalked heads, rarely in panicles, rising in clusters from the branches.

W. Americana has ovate-oblong leaves, plaited, serrated, and tomentose; the heads of the flowers axillary; the calyx, petals, and capsules of the same color. This plant is a shrub about 4 feet in height, with yellow flowers. It is a native of the Bahamas Islands, of Surinam, and the Caribbean Islands.

W. Durandina has a suffrutescent ascending stem, with oval or ovate-oblong leaves, obtuse, and entire at the base; the lower ones pilose, the upper ones tomentose and glaucous; the heads of the flowers terminal and axillary; the calyx pubescent; the petals bearded above the claw; the tube of the stamens entire. This plant is a native of Brazil and Argentina. The species is called Durandina or Durandina. This plant, like the whole of the order to which it belongs, contains much mucilaginous matter, and is used in decoction in the Brazils, as a remedy for phthisis, the chest, and also in some of the forms of venereal disease. It is also used as an external application to wounds.

There are several other species of Waltheria: they are most of them inhabitants of South America, and are generally inconspicuous shrubs. They are of easy cultivation, and will thrive in a loamy soil or a mixture of loam and peat, and may be readily propagated by cuttings.

WALTON, BRYAN. [Polyglots.]

WALTON, Izaak, the "Father of Angling," was born at Old Hall, near Battle, Sussex, on the 5th August, 1593. The register of baptisms and burials supplies the name of his father, one Jervis Walton, who appears to have been of the rank of a gentleman. Nothing more is known of this person, except that he died in the year 1560-7, leaving his son Izaak, it is supposed, an orphan.

From the time of Walton's birth up to the age of twenty, nothing is known of him. It is presumed that he was apprenticed to a relation of the same name who dwelt in London, and was called Mr. Walton, or Mr. de Walton, but the identity of trades seems to be the sole ground for this conjecture. He must however soon after the age of twenty have been engaged in business on his own account, for, in 1624 Sir John Hawkins, in his possession of the "Adventurers," writes, "Walton dwelt on the north side of Fleet Street, in a house two doors west of Chancery Lane, and abutting on a message known by the sign of the "Harrow," and that his house was then in the joint occupation of himself and a hosiery called John Mason." About 1623 (a year before the date of this deed) Walton states that he first began "a happy affinity" with the family of his first wife, Rachel Froud, a descendant of Archbishop Cranmer. He was married to this lady on the 27th of December, 1626.

It was doubtless owing to this marriage that Walton first became interested in Hooker, the author of the "Laws of Ecclesiastical Polity." George Cranmer, his wife's uncle, having been Hooker's personal friend, communicated the materials for the admirable Life of Hooker which Walton wrote during his residence with Dr. Morley in 1633: it was not however published until 1645.

Sir John Froud's son, John, afterwards Dean of Rochester, was the most interested person in the publication of this work, and it was printed at the end of Donne's poems published by his son in 1633. This elegy seems to be Walton's first avowed literary effort, and in it he speaks of Donne's "powerful teaching" and calls himself "to convert," which gives a clue to the intimacy between Walton and Donne. Sir Henry Wotton requested Walton to collect materials for a Life of Donne, of which Sir Henry himself had thought of writing, but his death in 1639 put an end to the design. Walton believed that these materials were to be published without a preface, determined on writing it himself, and in the introduction to the Life, published with the Sermons in 1640, he fully explains the reasons which induced him to become Donne's biographer.

Previous to this publication Walton had removed into Chancery Lane, a few doors from Fleet Street, where his wife gave birth to two sons, both of whom however died. After this calamity, in August, 1640, very much depressed, Walton retired to the wilds of America, and in 1644 he returned to London, as is known from the entry in the register of St. Andrew, Holborn, where his son, Richard, was born in 1641. In this same year Walton published a collection of Sir Henry Wotton's letters, poems, &c., under the title of "Reliquiae Wottonianae," to which he prefixed the Life of Wotton.

Walton had by his marriage connections identified himself with the Royalist party, and the strongly expressed approval of Charles I. of the "Life of Donne," combined with other circumstances, rendered him very zealous in a good cause, and during the first part of his life, the "Lesser George" having been confirmed to his care after the battle of Worcester, by Charles II., for safe conveyance to London. Ashmole details this service in his "History of the Order of the Garter," and declares that Walton was "well known, and as well beloved of all good men."

In 1653 the work upon which his fame principally rests appeared—"The Complete Angler," or "Contemplative Muses Recreation," a work which to us, Lords of Sir Harry Nicolas, whether considered as a treatise on the art of angling, or as a beautiful pastoral, abounding in exquisite descriptions of rural scenery, in sentiments of the purest morality, and in the unaffected love of the Creator and his works, has long been ranked among the most popular compositions in our language."

In 1654 the second edition of the "Reliquiae" and in 1655 the second of the "Angler" appeared. Between this period and 1659, the date of the appearance of the latter, one of Sir Nicholas Barbon's "Lamps," a work which to us, Lords of the Admiralty, was an interesting volume, was written. In 1659-60 Donne's Life was first published as a separate work. At the Restoration, two years afterwards, Walton testified his joy by addressing an "Humble Eclogue" on the subject to Alexander Brome, printed with that writer's poems, and published in 1665.

During the troubled times preceding the Restoration, Walton had become intimate with Drs. Morley and Saxonden, who were now elevated to the unexpected seats of Worcester and Lincoln. Another friend of Walton's, ...
King, was also reinstated in the see of Chichester. In 1662, having again become a widower, he left his residence, which had been in Pater-noster-row, and went to live with Dr. Morley, who was just then made Bishop of Winchester. At this time also he took the lease of a house in Paternoster-row, called the Cross Keys, which was burned down in the great fire.

In 1670 the Life of George Herbert was published, a prebendary of Winchester Cathedral. Walton's son is supposed to have been educated by his maternal uncle, Thomas Ken, also a prebendary of the same cathedral, for in 1676 we find him graduating together on the Continent forming a regular part of the education of those days. Young Walton was soon after admitted at Christ Church, Oxford.

In 1676 Charles Cotton, Walton's well-known condictor in the later editions of the 'Complete Angler' (Cotton contributing a treatise on fly-fishing to that work), and a poet of some merit, as his 'Remains' testifies, comes into notice. He built the fishing-house on the banks of the Dove, near his own house, Beresford Hall, and there was his old age found the ease and retirement which he so well deserved. In the year 1678 his last literary efforts appeared; the Life of his friend Bishop Sanderson, and an introduction to a poem by John Caius, 'Daniel's Vision.' The misfortunes of Archbishop Laud, concerning which strange mistakes have been made. Many persons attributed it to Walton himself, but Sir Harris Nicolas has proved that the family of Walton's second wife intermarried with a family of this name, and through them the poet got access to the Archbishop's papers. An anonymous tract, printed in 1680, entitled 'Love and Truth,' is attributed to Walton, but upon slender authority.

Walton died at the house of his son-in-law, during a severe storm on the 13th of December, 1683, and lies buried in Winchester Cathedral.

Walton's son became a canon of Salisbury Cathedral, and is said to have contributed largely to Walton's 'Sufferings of the Clergy,' and to have most hospitably received Bishop Ken when deprived of his bishopric. He died in 1720, and Anne Walton in 1715. There are no descendants of the name of Walton living. A good portrait of 'Old Isaak,' by Houseman, was bequeathed by a descendant to the National Gallery.

There are the existing editions of the 'Complete Angler,' from that of 1653 to that of 1833. This last is a splendid work in two quarto volumes, edited by Sir H. Nicolas, who has written the first good Life of Walton. There was also an edition of all Walton's works by Major, in 1823. Dr. Zumbusch's poor Life of Walton, prefixed to an edition of his 'Lives.'

WALTON-ON-TAMES. [SURREY.]
WALTZ (from Waltzen, Germ. to roll), a gay dance, in triple time, and executed by two persons, who, almost embracing, rapidly turn round on an axis of their own, while moving quickly in a circle whose radius is from ten to twelve feet, according to the dimensions of the room.

Dr. Burney with much naïveté says, 'Having seen the Waltz performed by a select party of foreigners, we could not help reflecting how uneasily an English mother would be to see her daughter so familiarly treated; and still more to witness the obliging manner in which the French would be to the English.' It is observed that the tune used to add that the remark was made before the waltz had been introduced into the British Isles.

WALWORTH, WILLIAM. [MACCABE.] WANDSWORTH. [SURREY.]
WANGA/RÁ is a country in Northern Africa, unknown to the ancients and also to modern travellers, but mentioned by the Arabian geographers Edrisi, Abulfeda, and Ismail. These authors agree in stating that in Wangara the Niger terminates, and Leo Africanus adds that it terminates in the sea. According to our present knowledge we must suppose that Wangara is the delta of the Quorra, and this supposition is supported by the description which is given of the country. The authors above mentioned describe it as an alluvial tract and intersected by the branches of the Niger, and annually overflowed by the rains of July, and in which there are several fresh-water lakes are found in it. Leo Africanus says that the low tract is called Genni by the inhabitants, and that it is contiguous to Wangara, which thus would extend from the mountainous region of the Quorra and the Thadda. The name of Genni or Guni appears even at present to be used in Northern Africa for the delta of the Quorra, and this name seems to be derived from that of Guinea, which Europeans have been able to apply to that portion of the Continent forming a regular part of the education of those days.
New Testament (published in 1597). After this he was taken into the service of Dr. Chariot, master of University College, who kept him at his own lodgings, and seems to have employed him in transcribing, compiling, abridging, and other such work. Chariot also got him appointed one of the under-keepers of the Bodleian Library; and he took a principal part in drawing up the Indexes to the Catalogue of MSS., the Latin preface to which is of his composition. He then left Oxford, and removing to London, became secretary to the Society for Promoting Jocher's historical works, and his employment was as assistant to Dr. Hickes, the eminent Anglo-Saxon scholar, for whom he travelled over the kingdom in search of manuscripts in that language, and drew up in English a catalogue of those contained in the public and private libraries and other repositories visited by him, which, after it had been translated into Latin by another hand, was printed in Hickes's 'Theaurus Linguarum Veterum Septentrionalium,' 31mo., fol. Oxon., 1725, and forms the third volume of that great work. This is Wanley's principal performance; and it is admitted to be done, all circumstances considered, with diligence, care, and competent learning. His last employment was as librarian to Harley, Earl of Oxford, the founder of the Harley library, and he compiled lists of manuscripts, and to his son, the second Earl, both of whom were highly satisfied with his services in that capacity. He compiled the Catalogue of the MSS., which was first printed in 1702, as far as to No. 2407. Among the London libraries which were visited by him is the famous London Diary, kept by Wanley, from March, 1715, till within a fortnight of his death, mostly of proceedings connected with the Harleian library. Several extracts from it are printed in the 'Anecdotes of the English translators of the Old Testament,' by Leonard Epper, published at London in 1778. 'The only separate work published by Wanley is a translation (from the French) of Ostervald's 'Grounds and Principles of the Christian Religion,' which appeared at London in an 8vo. volume, in 1704.

There are many letters relating to Wanley, principally from his contemporary and fellow antiquary Hearne, in the 'Letters of eminent Persons of the Seventeenth and Eighteenth Centuries, from MSS. in the Bodleian,' published at Oxford in 2 vols., in 1813. And there are several of Wanley's own letters in the volume lately printed for the Camden Society, entitled 'Original Letters of eminent Literary Men of the Sixteenth, Seventeenth, and Eighteenth Centuries.' There are also letters from him to Sir Henry Ellis, K.H., F.R.S., &c., 4to., 1843.

WANSIDI. [Somersetshire.]

WANSELEBEN, JOHANN MICHAEL, son of a Lutheran clergyman, was born at Erfurt in 1635. After the study of divinity and theology at Königsberg, he was successively private tutor, soldier, and vagabond; at last he attached himself, for the purpose of studying the Ethiopic, to Ludolf, at whose request he undertook a journey to London. The object of his excursion was to superintend the printing of Ludolf's ''Lexicon Ethiopicum'', which was published at London in 1661. Wanseleben was also employed, during his residence in England, by Edmund Castell, as an assistant in compiling his 'Lexicon Heptaglotrum.'

Wanseleben, on his return to Erfurt, was sent by Duke Ernst of Gotha, at Ludolf's suggestion, to examine into the condition of the Christians in Egypt and Abyssinia. He performed the Egyptian part of the undertaking, but returned to Europe without attempting to penetrate into Abyssinia.

He landed at Leith, in February, 1665, and proceeded to Rome, where he declared himself a convert to the Romish church, and soon after entered the Franciscan order. In 1670 he visited Paris, and was sent to Egypt by Colbert, for the purpose of collecting information respecting the state of the country and purchasing manuscripts. He landed at Damietta in March, 1671, and left Cairo for Constantinople in September. He, however, remained in Constantinople for some months, and was able to visit the convent of the Delta, the Faiyum, the deserts of St. Macarius and St. Antony, in search of manuscripts, and ascended the Nile as far as Esneh. He made several excursions from Constantinople into Asia Minor, and was preparing to return to Egypt when he was recalled to France.

He reached Paris in April, 1676; but instead of obtaining the objects of his ambition, a bishopric or professorship of Oriental languages, he was called to account for the money entrusted to his disposal, and disgraced for misappropriating the same. Upon being discharged by a grant of public money, he managed to print the Ethiopic works he had collected, his narrative of his journey, and a catalogue of the manuscripts in the library of the Château of Fontainebleau, where he died, on the 18th of June, 1679.

Ludolf, in the preface to his commentary on the 'History of Ethiopia,' speaks respectfully of Wanseleben, but his opinion may have been biased by the connection of the former scholar; he must have entertained some respect for Wanseleben's requirements when he sent him to London to carry his Ethiopic Grammar and Lexicon through the press. The published works of Wanseleben are: — 1. Index Latinus in Jobi Ludolfi Lexicon ''Ethiopicio-Latinum'; Appendix ''Ethiopicio-Latina, Liturgia S. Diocesarii, Patriarchae Alexandrini, ''Athiopi et Lat.'', Londini, 1661, 4to. 2. ''Conceptus Operum ''Ethiopicorum quae ad extendendum Principes Catholici'' et ''Libri ''Ethiopicorum'' decrevunt'' et ''Septemiarium vero'' (published by Paris in 1671, Parma, 1672), 8vo. 3. 'Nouvelle Relation, en forme de Journal, d'un Voyage fait en Egypte en 1672 et en 1673.' He was also a member of the Royal Society. This edition contains much more in detail than the Italian version: a 'History of the French establishment in Egypt,' published at London in 1678; 5. 'Histoire de l'Eglise d'Alexandrie fondée par St. Marc, que nous appelons celle des Jacobites Copistes d'Egypte, écrite au Caire même en 1672 et 1673, et traduite en France en 1675, 12mo.' 6. 'Voyage de Wansleben, une learned Papist, may have been compiled from his narrative. A MS. entitled 'Diarium conscriptum a J. M. Wanslebio, Societate Thuringiana,' ab anno 1674, is said to be preserved in the Duela library at Weimar.


WANSTEAD. [Essex.]

WANTAGE, a market-town in the hundred of Wantage, in Berkshire, 63 miles west by south of the General Post-office, London, by the coach-road through Maidenhead, Henley-on-Thames, and Wallingford.

Wantage was a place of some importance in the time of the Saxons, when it formed, with the neighbouring lands, part of the patrimony of the West Saxon kings, who had a residence here. It was the birthplace of King Alfred the Great.

The parish of Wantage has an area of 7530 acres, and comprehends the town of Wantage and the hamlets of Charlton and Grove. It contained, in 1831, 729 inhabited houses, 36 uninhabited houses, 748 families, and 3282 persons; rather less than a third of the population was agricultural. The town stands at the intersection of the London road with the Great Western road, with a cross-road from Oxford to Hungerford: the streets are irregularly built, and contain but few good houses. The parish church, dedicated to St. Peter and St. Paul, is an ancient cross church, with a tower rising from its intersection: it contains some ancient tombs and monumental brasses, partly of the Wantewarren family. There is an ancient building of Norman architecture, called by Leland a church, standing near as a school-house in the ancient mansio. Wantage was placed on the route by the Geseps Canal comes up to the town, and on Saturday for pigs, cattle, and
cheese fair, and in the year two fairs for cattle and cheese, one for cherries, and a statute-fair. There are two banking-houses.

The living is a vicarage, of the clear yearly value of 50s., with a glebe-house; in the rural deanery of Abingdon, in the archdeaconry of Berkshire, and diocese of Oxford. The perpetual curacy of Grove in the parish, of the clear yearly value of 75l., with a glebe-house, is in the gift of the vicar. There are places of worship for Independents, Baptists, and Wesleyan Methodists.

The parish, in 1831, nine day-schools, with 231 children, namely, 106 boys, 56 girls, and 69 children of sex not stated; making about one in fourteen of the total population under daily instruction. One of the day-schools, with 50 boys, is partly supported by subscription. There was at the same time one Sunday-school with 80 boys and 90 girls. Bishop Butler, author of 'The Anatomy of Religion,' and Isaac Kimber, a dissenting minister and an historical and biographical writer of some distinction, were natives of Wantage.

(Lysons's Magna Britannia; Beauties of England and Wales; Parliamentary Papers.)

WAPENTAKE (from the Saxon weapen, arms, and tac, touch, or betach, yield) is a term which prevails in Yorkshire. It indicates a territorial division like the hundred of other counties. [Shire.]

The word is derived from the habit which our Saxon ancestors had of attending with their weapons the meetings of their tribes, and which was even canonized for the administration of justice or to decide on peace or war. This circumstance, inseparable from the assembly, gave a name to the meeting and to the district whose inhabitants were convened. Various explanations, all however connected with usual arms, are given to the last syllable. By some it is supposed to mean the touch or rustling of their arms, by which the assembly was wont to signify its opinion of the matters submitted to it; by others the acceptance by the lord of the tenants' arms in token of their submission to him. There are the two solutions quoted by Spelman. Others however say that the word denotes the custom which the vassals had of touching the spear of the lord as a mark of homage; and this seems to be the explanation most generally adopted. (Spelman, Wapentackum et Wapengetachum; Cowell.)

WAPELI. [DEEK, vol. viii., p. 350.]

WAPPING. [LONDON.]

WARASDIN, one of the three counties (Warasin, Kreu, and Agram) into which the Austrian kingdom of Croatia is divided, is bounded on the west and north-west by Styria, on the north-east by Szalad (a county of Hungary), on the east by Kreuz, and on the south by Agram. Its area is 720 square miles, and the number of the inhabitants 165,450. (Statist. Chart. Croat.)

The face of the country is an undulating plain, traversed by a branch of the Austrian chain from west to east, which divides it into two nearly equal parts. The principal rivers are the Drave, which runs along the northern frontier, draining the country from Hungary; the Scutla, which separates Croatia from Styria; and the Krapena, which forms the frontier between the cantons of Warasdin and Agram. More than a third of the country is covered with forests. The plain near the Drave produces more than sufficient corn for the consumption of the inhabitants, but the mountainous and larger portion seldom yields enough. The natural productions are corn (especially maize), milk, tobacco, fruit of different kinds, especially plums, and timber. There is a very good breed of horned cattle, and great numbers of swine, fish, bees, and game. The minerals are, besides marbles of different kinds, a very thick stratum of native sulphur at Radoboli, and gold, which is obtained by washing from the Drave, to the value of 1200 to 1800 ducats annually. Blumenbach moreover says that the gold-washing in the Drave has ceased. The climate is pleasant and healthy.

WARASDIN, the capital, or county town, is situated on the right bank of the Drave, over which there is a remarkable wooden bridge. It lies in 46° 18' N. lat. and 16° 22' E. long., in a plain which is enclosed on the east and west by mountains. It is a well-built but not very lively town, and contains several large and handsome edifices, among which are the cathedral, a Jewish church, a Jew's hospital, the senate-house, the residence of the bishop and chancellor, and some convents. There are likewise a Roman Catholic gymnasium, a convent of Ursaline nuns, a girls' school and hospital, and, within these few years, a philharmonic society. Good wine is produced in the environs. Some tobacco is manufactured in the town, and there are some vinegar-breweries. The suburbs are extensive, and contain some good buildings. Warasdin was formerly fortified, but the fortifications have fallen into decay.

(Blumenbach, Neuestes Gemäle der Oesterreichischen Monarchie; Jenny, Handbuch; Hasel, Handbuch; Die Oesterreichische Nationalbibliothek.)

WARBECK, PERKIN. [HENRY VII.]

WARDERG. [SWEDEN.] — WARBLERS. [SYLVIIDAE.]

The true Warblers were arranged by Linneus under his genus Motacilla. They comprise a smaller single group.

Mr. Nuttall gives a concise but comprehensive general account of this interesting group.

The bill, lie remarks, is slender, straight, awl-shaped, higher than it is wide at the base. The bill is relatively short in proportion to the head, the culmen being less than the fourth longest; scapulars considerably shorter than the quill feathers.

Female generally distinguished by a less vivid plumage.

Young usually assuming the adult plumage after the first moult. Some species moult twice in the year.

Mr. Nuttall further observes that species of this mercurous race are spread over the whole globe. They usually have a general sprightly, in some cases iridescent, plumage. The males, in many cases, have an incessant activity, in accordance with the subtilities of their flying insect prey; they therefore approach both in habit and character the Flycatchers, Vireos, Thrushes, Saxicolous, and Wrens so nearly, that it is rendered difficult to which of these genera they ought to be referred. They principally inhabit forests or thickets, and some affect watery situations or reed-marshes. Many are remarkable for the melody of their song, and the sprightliness of their air, which in the period of incubation they almost incessantly counter. Those coo in the autumn, or winter, or even in the spring, are characterised for his powerful, varied, and pathetic lay, as well as the humble but tuneful Robin Redbreast, belong to the highly vocal genus (Syliva, Lath.); and though many species seek out the arctic solitudes in which to waste their melody or soothe alone their mates, at other seasons may be observed among the more familiar tenants of our gardens, groves, and orchards. Living almost exclusively on the winged insects of summer, which they destroy, or, on the autumnal winds, which are its true or false friends as such. But how well this bird is taken to the south in autumn, and pass their winter in the warm or tropical regions. Some exist more or less generally on berries in the latter end of the year, and consequently find means thus to winter in the milder climates which they are sometimes exposed to from severe extremes. Among many of the species the more active and vigorous male, intent on the object of his migration, precedes the arrival of the female.'

EUROPEAN WARBLERS.

The following are figured and described in Mr. Gould's 'Birds of Europe': —

*Wheatears.*

Sarciza cachinnans. — The Black Wheatear.

Geographical Distribution. — Southern Europe and Africa.

Sarciza leucoma. — The Pied Wheatear.

Geographical Distribution. — Northern Europe, and probably Northern Asia.

Sarciza oenanthe. — The Wheatear.

Sarciza stagnazza. — The Russian Wheatear.

Geographical Distribution. — South of Italy, Dalmatia, and Greek Archipelago; rare in the north of Italy, not recorded from the central European districts.

Sarciza aurita. — Black-eared Wheatear.

Geographical Distribution. — Hillier parts of south of Europe. Common in the north of Italy than the Russian Wheatear. Frequent in the Neapolitan States and Sardinia.
The Whinchats.

Whinchats.

Saxicola rubicola.

Description.—Old Male.—Summer Plumage.—Head, throat, back, and small coverts of the wings perfect black; but each feather very finely bordered with ruddy brown; a great white spot on the sides of the neck, on the upper part of the wings, and on the rump. Breast deep ruddy; lower parts very bright ruddy; wings brown bordered with brighter brown; base of all the tail-feathers white, the rest of a blackish brown. Length four inches four or five lines.

Male after the Autumnal Moults.—Wider ruddy borders at the end of the feathers on the throat; those of the nape and the back fringed with large borders of that colour; breast bright ruddy, the rest of the lower part of the body clear Isabella colour; wider borders on the quills, and the end of the tail ruddyish.

Female.—Upper parts blackish brown with borders of yellowish ruddy; wings and tail-feathers brown bordered with yellowish ruddy; throat black, with small whitish and ruddyish spots; the white space on the sides of the neck and of the upper part of the wing less extended; ruddy colour of the breast less vivid.

Young Males before their Second Moults like the old female.

Young at their Departure from the Nest.—Feathers of the upper parts greyish brown; all terminated by a small whitish spot.

After the autumnal moults all the individuals have brown ruddy colour on the head and the back; this colour occupying solely the fine points of the bars, they by exposure and friction cause in the spring the black colour of the middle of the feathers to appear. (Tomm.)

This is the Traquet rubicole and Moteur Traquet of the French; Saltabasone, Zompiscard, and Sallipalolo of the Italians; Schwarzkehliger Steinenschmäuer of the Germans; Clochder y cerrig of the ancient British; and Stonechat, Stonechatter, Stonemith, Stonemik, Stonecirk, and Moor-wistle of the modern British.

Geographical Distribution.—Russia, Germany, France, Provence, Italy, Smyrna, Japan, the Deccan, the banks of the Ganges, the mountain-chain of Upper Hindostan, Senegal, and South Africa (Cape). England, Ireland, and Scotland.

Habits, &c.—Though several of this species remain through the winter months, the general body quit the British Islands in autumn, nor do they return till the spring is forward. It is to be observed, however, that the parties which are observed in this country, and are called Robins, are generaly seen in the open tracts which are their favourite quarters, and, and wind and weather permitting, there are to be seen almost ever in motion, now on a stone, now on a bush, from which they dart to seize the passing insect and then return. Although their song, which is given on the wing, is short, it is peeping; and they are in a degree mocking birds, being no bad imitators of the song of others. Besides insects, worms are acceptable food to them; and for these they may be frequently seen foraging on the ground.

The nest, which is of considerable size in proportion to the bird, is framed in the beginning of April on the ground or some dwarf bush. Externally it is fabricated of moss and grass; and a few fine bents, hairs, and feathers form the lining. The eggs, which are laid from the middle of April to the third week in that month, are made with the very rudest materials, somewhat of a greyish tint, finely dotted with obscure reddish brown at the large end.

When the young are hatched—that is, about the middle of the month—the old mates excepting the female, become very bold. They have a constant clamour, and put in practice many a ruse to deceive the schoolboy and draw him from their nest.

Redstarts.

Phoenicura rubicilla. The Redstart.

Phoenicura tithys. The Black Redstart. Rare in Britain.

We select the Common Redstart, Motacilla phaenicurus, Linnaeus, as an example.

Description.—Old Male.—Forehead and eyebrows pure white; a small black spot on the tip of the bill, space between that and the eye, throat, and upper part of the neck deep black; head and upper part of the back bluish ash; breast, sides, rump, and lateral tail-feathers brilliant ruddy; abdomen whitish, lower coverts of the tail deep ruddy, two miles feathers brown.

The Female (which may easily be confounded with that of Phoenicura suecica, the Blue-throated Warbler) with the upper parts grey strongly shaded with rusty; great wing-coverts, breast, and sides with ruddy yellow; throat, breast and sides rusty, belly whitish, under tail-coverts paler rusty. The very old have the throat blackish, spotted with rusty.

Young Males of the Year.—No white on the forehead; black of the throat broken with whitish lines; ruddy colour of the breast varied with white; upper parts rusty ash, tail coverts and feathers bordered with white.

Young Females.—These may be distinguished from the nightingale by the black bill and feet, and the two middle tail-feathers, which are always blackish-brown.

Belon is of opinion that this is the phoenicurus Aristotelis (Hist. Anim. ix. 40). It is the Corosolo, Codoroastro, Culo ranzo, and Culo rosso of the Italians; Rossignol de mar à gueule blanche of the French; Schwarzkehliger Anger, Schwarzköhllein, and Garten-Rothschleicher of the Germans; Gekraagde Roodstaart of the Netherlanders; Roosje of the Swedes; Roedstiert of the Danes; Blodfugl of the Norwegians; Rhonei gec of the antique British; Redtail, Brantail, and Firetail of the modern British.

Geographical Distribution.—Denmark, Norway, Sweden, Russia, Europe generally, particularly Holland, France, Provence, Spain, and Italy; Portugal, and to the south-east of that locality, Germany, and Japan.

In Britain it arrives about the middle of April, penetrating as high as Sutherlandshire in Scotland. Pennant says that it extends no farther west than Exeter, but it has been seen in the eastern portion of Cornwall, and is far from uncommon in the western part. The ancient British name above given, from Pennant, indicates that the bird must have been formerly known in Wales, and certainly is now, and has even been found near Belfast in Ireland.
appears to be a singular instance. They quit England, generally, at the commencement of September.

Habits, &c.—This is a sweet and indefatigable singer, and has been heard in a wild state as late as ten o'clock at night, and as early as three o'clock in the morning. The skirts of woods, lane and meadow hedge-rows, orchards, gardens, the old ivied-wall of a ruin, are all favourite haunts. The male shows himself, as if proud of his pretty plumage, whilst he is uttering his soft, sweet song, vibrating his tail the while, on some low branch of a not high tree or weather-beaten stone, nor does his music cease as he flies to another station to continue his strain.

A crevice in a wall, a hollow tree, a nook in a building sheltered behind a limb of antient ivy, or even of an old fruit-tree trained against it, sometimes a hole in the ground, receives the nest, the outside of which is rough and rich with moss, and lined with hair and feathers. Four, six, and even eight greenish-blue eggs are deposited, and the first brood, for there are generally two in a season, are frequently fledged by the second week in June. The food consists of worms and insects, fruit, and berries. Bechstein speaks highly of its attractive qualities in plumage, gesture, and song; and says it will add to its natural notes parts of the songs of other birds. He tells us that those which built under his roof imitated tolerably the chaffinch that hung in a cage at his window; and his neighbour had one in his garden that repeated the strains of a black-cap which had its nest near.

In captivity Redstarts become so tame that they will take a meal-worm from the hand. Sweet says that, when kept in confinement, he considers this bird the most sensible and, if brought up from the nest, the most attached of all small birds; but he adds that it may be deemed the most tender of all the tribe. It is, he observes, a real mocker, and, if bred up from the young state, will learn the note or call of almost any other bird: it will also learn a tune, and will sing by night as well as by day, as long as a light is kept burning. He had one that whistled the Copenhagen Waltz.

The Redstart.

The portrait of Oiseaux has the following quatrains under the cut of this Nightingale:

*Waltz.*

*Notwithstanding the censure involved in the last line and a half, however, the Redstart is a very charming songster. In comparison with the nightingale, every other bird's song must fade.*

*Phoenicura suecica, the Blue-throated Warbler. [Breast.]*

*Robins. Erythaca rubecula, The Redbreast. Though the subject be very tempting, we should not be justified in occupying space in this work by a detailed description of this familiar bird, dear to infancy and old age. Belon makes it the *Epithetos* of Aristotle (ix. 49), and not without reason. Geographical Distribution.—Norway, Denmark, Sweden, Iceland (rare), Orkney, Scotland, England, Ireland, and Wales (where it is called *Yr Hobi goch* and *Brogoch*), the temperate and warm parts of Europe, plentiful in Spain and Italy, North Africa, Smyrna, Trebizond. The following quatrains appear under the figure of this species in the Portraits above cited.*

*As Remoulant de moraille ressemble* 
La Georce-rouge, en chans armoinence. 
Elle en lyre appelle joyeusement 
Luy en son supplice de nous assouvaise.*

 Accentor.

*Accentor alpinus, The Alpine Accentor. Geographical Distribution.—The Alpine districts and mountainous parts of the continent of Europe. Switzerland and Tyrol have it in abundance. In Britain its appearance is comparatively rare.*

*Accentor modularis—Common Hedge Accentor, a Hedge Warbler. Hedge Sparrow of many districts; *Lotul g y gwyn* of the ancient Britons. This poor little songster's nest is generally the first that the urchin takes; the eggs are azure, and are generally laid very early, and before the leaf is sufficiently out in the hedge-row, one of its most frequent localities, to hide the nest.*

*Geographical Distribution.—Great Britain. Central Europe.*

*Accentor montanillus, Mountain Accentor. Geographical Distribution.—Eastern Central Europe and Asia, Eastern Siberia, the Crimea, Neapolitan States, Dalmatia, and Central Hungary.*

Locustelles.

*Locustella fluviatilis, The Reed Locustelle. Geographical Distribution.—Rare in Western Europe. Frequent in Austria and Hungary, and of common occurrence near Vienna, in the gardens of the little isles in the Danube.*

*Locustella avicula, The Bruke Locustelle. Geographical Distribution.—England and Ireland, arriving in April. Austria, Hungary, Italy, South of France, Holland (not common), Germany (north and northeast), Saxe (rarely, as a passenger).*

*Locustella luscinoides, Willow Locustelle. Geographical Distribution.—South of Europe. Specimens have been taken in England (Cambridgeshire, 1836). Winter retreat Africa, probably the urchin takes; the eggs are azure, and are generally laid very early, and before the leaf is sufficiently out in the hedge-row, one of its most frequent localities, to hide the nest.*

*Geographical Distribution.—South Russia.*

Salicarias.

*Salicaria turboidea, Great Sedge Warbler. Geographical Distribution.—Holland abundantly, Lowlands of France, even near Calais.*

*Salicaria olivetorum, Olive-trees Salicaria. Geographical Distribution.—Ionian Islands; Zante. (Sri Lanka.)*

*Salicaria arundinacea, Reed Wren. Geographical Distribution.—Temperate Europe. British Islands. Holland, Germany, France, rare in the south of Europe.*

*Salicaria palustris, Marsh Warbler. Geographical Distribution.—Central Europe. Frequent on the banks of the Po and Danube. Parts of Switzerland, Germany, and Holland.*

*Salicaria argentea, Sedge Warbler. Britain generally and the Continent. Very abundant in France, Germany, and Holland.*

*Salicaria melanopogon, Moustached Warbler.*
The Dartford Warbler is, generally speaking, insectivorous, but fruits do not come amiss to it, that is, such berries as it may find near its retreats.

**Noteworthy**: This is the *Pitte-chou de Provence* of the French; the *Maggianna* of Saxi, and *Proverne Sanger* of Meyer.

**Geographical Distribution**: Southern Europe; the countries that border the Mediterranean, Spain and the south of Italy, but the Prince of Canino and Musigiano notes it as rare, and as found in summer in mountainous situations. It is comparatively scarce in Germany and Holland. Permanent in England, but not generally diffused. Frequent in the neighbourhood of London, and also at Bagshot, Chobham, and their vicinities. Devonshire, Cornwall, and Berkshire possess it also.

**Habits**: This pretty warbler is a very hermit in its love of retirement and seclusion. The furze-brake and tangled heath are its favourite haunts, and well it knows every labyrinth of every bush on the breezy common where it takes up its abode. Mr. Gould observes, that its form closely alludes it to the Superb Warblers (*Melurus*) of New Holland, while its relationship to the Common Whitethroat is strikingly apparent. With reference to its secluded habits, the same author well remarks that in the spring it becomes more lively and more frequently visible, rising on quivering wing above the tops of the furze, and uttering a hurried babbling song, much after the manner of the Whitethroat; at these times it erects the feathers of the head into a crest, and distends the throat, exhibiting many attitudes and gesticulations.

Dry stalls and grass interwinned with fibres of plants and roots form the nest, which is generally snugly hid in the very heart of a thick furze-bush not far from the ground. Eggs greenish-white, with brown speckles and ash spots, and thus resembling those of the Whitethroat.

The Dartford Warbler is, generally speaking, insectivorous, but fruits do not come amiss to it, that is, such berries as it may find near its retreats.
African Warblers.

Many of the warblers of Europe make Africa, especially the north, their winter-quarters. The Stonechat, as we have seen, extends to that continent, and Mr. Swainson, in his 'Birds of Africa,' records another, Saxicola fractalis, the White-fronted Stonechat, which is entirely uniform black, with the front of the head snowy. Whether this spot is a sexual distinction peculiar to the male, or whether it is common also to the female, is yet, according to Mr. Swainson, to be discovered.

American Warblers.

Although the American Warblers are not gifted generally with much power of song, the species are very numerous. The Prince of Camino and Musignano, in his 'Specchio Comparativo,' enumerates thirty-four American species of Sylvis, four belonging to the subgenus pruni, and one of Saxicola (sialia). In his 'Birds of Europe and North America,' the same noble author records forty-five American species of Sylvia warblers, belonging to the genera Parula, Trichos, Verminus, Sayia, Sylvia, and Cullivora. The bulk of these species are Sylviae. He also notices three species of Sialia (American).

We select, as an example, Sylvia coronata. The Yellow-crowned Warbler, or Myrtle Warbler.

Description.—Summer Plumage.—Blackish slate-colour, streaked with black; beneath white; breast spotted with black; crown, sides of the breast, and rump yellow; wings bisected with white; tail black; three lateral tail-feathers spotted with white.

Winter Plumage—edged with brownish olive, the yellow of the crown partly concealed by a margin of the same oliveaceous hue; no black on the head or face. Young brood, the young much paler and nearly without black.

Length from five to six inches; alar extent from eight to nine.

Geographical Distribution and Habits.—Arrives in the Middle and Northern states of the Union from the south towards the end of April or beginning of May, and then probably passes north to breed. In August they reappear, in those states, and remain about the gardens and woods till about the end of November, feeding almost exclusively at this period on the myrtle-wax berries (Myrica ereryfera) or those of the Virginian Juniper. These, says Mr. Nuttall in continuation, 'other late and persisting berries, and occasional insects, constitute their winter food in the Southern states.' Considering the numbers, in the swamps and sheltered groves of the sea-coast, they pass the cold season. In fine weather, in the early part of October, they may be seen at times collecting grass-hoppers and moths from the meadows and pastures, and, like the Blue-Bird, they often watch for the appearance of their prey from a neighbouring stake, fence, or fence-rail; and at this time are so familiar and unsuspicous, particularly the young, as fearlessly to approach almost within reach of the silent spectator. At the period of migration they appear in an altered and less brilliant dress; the bright yellow spot on the crown is now edged with brownish-olive, so that the prevailing colour of this beautiful mark is only seen on shielding the feathers with the hand; a brownish tint is also added to the whole plumage; but Wilson's figure of this supposed autumnal change only represents the young bird. The old is, in fact, but little less brilliant than in summer, and I have a well-founded suspicion that the wearing of the edges of the feathers, or some other secondary cause, alone produces this change in the livery of spring, particularly as it is not in any sexual distinction. While feeding, they are very active, in the manner of Flycatchers, hovering among the cedars and myrtles with their wings only partly opened; but when satisfied with gleaning food. In spring they are more tidy, busily, and restless. Of their nest we are wholly ignorant. When approached, or while feeding, they only utter a feeble plaintive tsey of alarm. This beautiful species arrives here about the 7th or 8th of May, and now chiefly frequents the orchards, uttering, at short intervals, in the morning, a sweet and varied, rather plaintive warbling, resembling in part the song of the Summer Yellow-bird, but much more the farewell, solitory, autumnal notes of the

Robin Red-breast of Europe. The tones at times are the so ventriloquial and variable in elevation, that it is often easy to ascertain the spot from which they proceed. While thus engaged in quest of small caterpillars, it seems almost insensible to observation, and familiar searches for its prey, however near we may approach (Manual).

The Summer Yellow-bird, Sylviae olivacea, above noticed, is remarkable for its skilful prevention of the designs of the Cow Treepip (Motacilla). 'This is amusing,' says Nuttall, 'to observe the sagacity of this little bird in disposing of the eggs of the migratory and parasitic Cow Treepip. The eggs, deposited before the laying of the rightful tenant, too large for ejection, is ingeniously incarcerated in the bottom of the nest, and a new lining placed above it, so that it is never hindered to prove the dragon of the brood. Two instances of this kind occurred to the observation of my friend Mr. Charles Pickering, and last summer I obtained a nest with the adventitious egg about two-thirds buried, the upper edge only being visible, so that in many instances it is probable that this species escapes from the unpleasant suspicion of becoming a nurse to the sable orphan of the Cow-bird. She however acts faithfully the part of a foster-parent when the egg is laid after her own.

Australian Warblers.

The New Holland Wrens (Miliarus) may be considered as the Warblers of that fifth quarter of the world [Wrens]; but there are also some Sixtocline forms which should be here noticed. Such are the Epithianuree, of which the reader will find an interesting account under the titles of Epithianura albofrons, Epith. aurifrons, and Epith. triatrachus, in Mr. Gould's grand work on the 'Birds of Australia' now in course of publication.

We select, as an example, Epithianura albofrons, White-fronted Epithianura.

Description.—Male.—Forehead, face, throat, and all the under surface, pure white; occiput black; chest crossed by a broad crescent of deep black; the points of which run up the sides of the neck and join the black of the occiput; the upper surface dark grey with a patch of dark brown in the centre of the back feather; wings dark brown; upper tail-covers black; two central tail-feathers dark brown, the remainder dark brown, with a large oblong patch of white on the inner web at the tip; irides in some beautiful reddish-buff, in others yellow with a slight tinge of red on the outer edge of the pupil; bill and feet black.

Female.—Crown of the head, all the upper surface, wings and tail, greyish brown, with a slight indication of the oblong white spot on the inner webs of the latter; throat and under surface buffy-white; a slight crescent of black on the chest. (Gould).

Locality and Habits.—Mr. Gould first met with this
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species in a state of nature on the small islands in Bass's Strait, where, he says, it had evidently been breeding, as he observed several old nests in the Barilla and other stunted bushes which clothe other isolated spots, particularly chalky and green islands immediately contiguous to it in Flinders. He did not observe it in Van Diemen's Land or to the southward of the localities above mentioned. He thinks however that it extends over the whole of the southern portion of the Australian continent, for he has specimens which were killed at Swan River, in South Australia, and in New South Wales. The extent of its range northwards is not, he remarks, known. He had never seen examples from the north coast.

It is, observes Mr. Gould, 'a most sprightly and active little bird, particularly the male, whose white throat and banded chest render him much more conspicuous than the sombre-coloured female. As the structure of its toes and lengthened tendons would lead us to expect, its natural province is the ground, to which it habitually resorts, and evidently excises a preference to spots of a sterile and barren character. The male, like many of the Saxicoline birds, frequently perches either on the summit of a stone or on the extremity of a dead and leafless branch. It is rather shy in its disposition, and when disturbed flies off with considerable rapidity to the distance of two or three hundred yards before it alights again. I observed it in small companies on the plains near Adelaide, over the hard clayey surface of which it tripped with amazing quickness, with a motion that can neither be described as a hop nor a run, but something between the two, accompanied by a bobbing action of the tail.'

Mr. Gould adds that nothing is known of the nidification of this species. As little seems to be known of the rare Tri-colored Ephialtnura, the brilliant scarlet of whose plumage renders it a most striking object.

Ephialtnura albifrons. Male. (Gould.)

WARBURG, the chief town of a circle of the government of Minden, in the Prussian province of Westphalia, is situated on the river Dylem, in a very fertile plain. It is divided into the old and the new town, has six gates, two market-places, two churches, one chapel, one Dominican convent, and a Roman Catholic gymnasium. There are 3200 inhabitants, who have manufactories of linen and tobacco, some breweries, and a brisk trade, especially in corn, cattle, and iron. There are frequent pilgrimages to the chapel of St. Ermusus. Near the town are the ruins of the Deessenberg, which are worthy of notice as a remarkable monument of the times of chivalry.

(J. C. Müller, Geographisch-statistisch-geographisches Werckbuch des Preussischen Staates.)

WARBURTON, WILLIAM, a very distinguished English prelate, was born at Newark, 24th December, 1698, and was the elder of the two sons of Mr. George Warburton, an attorney of that place, who held the office of town clerk, and of Elizabeth, daughter of Mr. William Hobman, one of the aldermen of the borough. The family was originally from the county of Chester. Warburton's grandfather, also an attorney, who had taken the royalist side in the civil war, was the first of them that settled in Newark.

Warburton lost his father when he was only eight years old; so that the care of his education fell upon his mother, who was left with the charge of three daughters besides two sons, and who survived her husband. Being designed for the profession of his father and grandfather, he received the usual grammar education, first at the school of Okehain in Rutlandshire, under Mr. Wright, who afterwards became vicar of Cambden in Gloucestershire, then at that of Kidderminster and Malvern, to which last place his mind was especially turned. On leaving school in 1715, he was placed in the office of Mr. Kirke, an attorney, at East Markham in Nottinghamshire, with whom he continued till April, 1719, when he set up business for himself at Newark. But a love of reading and study had early taken possession of him; his professional success, probably impeded by these tastes, is supposed not to have been considerable; and at length, having made up his mind to enter the church, he received deacon's orders from Dawes, Archbishop of York, in 1723.

He now also published his first literary performance, a 12mo. volume of Miscellaneus Translations, in prose and verse, from Roman Poets, Ovatus, and Historians. In 1724 he orders from the printers a volume of his works at London, and by the interest of Sir Robert Sutton, to whom he had dedicated his book, was instituted to his first pre- ferment, the small vicarage of Gresley in his native county. This was in the end of 1724, and in the same year he went to London, and formed what we may call his first literary connexion, which was with Theobald, Concenœ, and others, then chiefly held together and banded into a sort of con- federation by their common hostility to Pope, under the screen of whose satire they had most of them to be protected. Warburton entered into all the animosities of his associates, and in particular was unfortunate enough to induce an epistle to Concenœ, dated January 2nd, 1726 (that is, 1727), in which he said that Dryden borrowed for want of leisure, and Pope for want of genius, and which, much to his annoyance, was published long afterwards, in 1766, by Akenside the poet, whom he had offended, from the original, discovered in 1756, by Dr. Gavin Knight of the Brit- ish Museum, in setting up a house in Concenœ Court, Fleet Street, where it is supposed Concenœ had lodged. (See Akenside's 'Ode to Thomas Edwards, Esq.,' and Bucke's 'Life of Akenside,' pp. 149-171.) Warburton's connexion with Theobald at this time also led him to furnish some notes to that gentleman's edition of Shakspere, which ap- peared in 1733.

In 1727 Warburton published, in 12mo., his 'Critica and Philosophical Enquiry into the Causes of Prodigies and Miracles,' and the same year his only contribution to the literature of his original profession, a treatise entitled The Legal Judicature in Chancery stated. The latter work appeared anonymously, and is stated to have been undertaken at the particular request of Samuel Burroughs, Esq., afterwards a master in chancery, who put the materials into Warburton's hands. In Reed's 'Law Catalogue, London, 1809, it is described as 'said to be written by Master Speier, but generally ascribed to Lord King.'

In April, 1728, Warburton, by the interest of Robert Sutton, was placed in the King's list of masters of arts for creation at Cambridge, on his majesty's visit to the university; and in June the same year he was presented by the same friend and patron to the rectory of Woot or Brant Broughton, near Newark. His next publication of importance, and the first which made him generally known, did not appear till 1736—his famous treatise enti- tled 'The Alliance between Church and State,' or, the Necessity and Equity of an Established Church, a work of Law demonstrating what was from the moment of its publication, to be very generally accepted by moderate politicians, and which made them as the surest vindication of national establishments. It was described by Bishop Wheeler as a book 'of very great merit after its appearance, as of the year 1734.'
that are to be found, perhaps, in any language, of scientific reasoning applied to a political subject.

J. D. the following year, 1738, Warburton published the first volume, containing the first three books, of his great work, ‘The Divine Legation of Moses demonstrated on the Principles of a Religious Deity, from the Omission of the Doctrine of a Future State of Rewards and Punishments in the Jewish Dispensation.’ It immediately, as was to be expected, raised a storm of controversy, which lasted for many years, and in the course of which the author had to defend himself against Drs. Stebbing, Sykes, Pococke, R. Grey, Middleton, and other assailants, in some respects a most unreasonable as well as with the common object of their attacks. Warburton treated them all, Middleton alone excepted, much as a schoolmaster might treat so many of his pupils who should have ventured into a dispute with him or to clamour against his authority.

The leading idea of the ‘Divine Legation’ is, that so important a doctrine as that of a future state, which must be regarded as the chief natural cement and bond of human society, could not possibly be dispensed with the scheme of mere human legislation, and that hence the Mosaic dispensation, in which, according to Warburton’s view, it is omitted, must have come from heaven, and must also have been maintained in a peculiar manner by a divine influence. This influence had, or had, or had not, this view was at least undeniably a new one; and it was developed by its author with ingenuity, a fulness and variety of learning, and an unflagging animation. It is a work which never had been written before, and perhaps has not been exhibited together in one English theological work. But in truth mere theological discussion forms only a small portion of the book; the author is continually making excursions from the straight path of his subject, and in this way the course of their journey, together, over some of the most interesting fields of literature and philosophy.

A second edition of the first volume of the ‘Divine Legation’ was called for before the end of the year in which it was printed. The second volume, containing the fourth, fifth, and sixth books, appeared in 1741. The first volume, enlarged and divided into two volumes, was published for the fourth time in 1756; and a new edition of the second, similarly enlarged, appeared in 1756. In a third edition, which appeared in 1763, this second part of the work was extended to three volumes; so that the whole now consisted of five volumes.

Meanwhile the author had also been engaged in a various other labours and had built up his fortunes in more ways than one. Shortly after the appearance of his first volume, in 1738, he was appointed chaplain to the Prince of Wales. The following year six letters which he published in ‘The Works of the Learned,’ in defence of the theory of Prophecy, and the attacks of M. de Crouzaz, introduced him to the acquaintance of Pope, who proved, for the few years that he lived, this the steady and zealous friend of his voluntary champion. A seventh letter, by the author of the ‘Divine Legation,’ contained an apology for the first of his published in ‘The Works of the Learned,’ completed the vindication of the poem in June, 1740; and when Pope died, in May, 1744, it was found that he had left Warburton half his library, with the property of all such of his works already printed as he had not otherwise disposed of, and all the profits which should arise from any edition to be printed after his death. In 1749, upon Lord Bolingbroke, in the preface to his ‘A Letter to a Patriot King,’ having charged his late friend Pope with having clandestinely printed an edition of that work some years before his death, its author’s leave or knowledge, Warburton is believed to have been the writer of ‘A Letter addressed to Bolingbroke, which immediately appeared in vindication of the deceased poet, and which Bolingbroke soon afterwards repied to in what he called ‘A Plain Answer to Mr. Warburton,’ and in the third volume of his ‘Letters,’ added to the above, on Warburton and Bolingbroke had once been introduced to each other by Pope, but parted with feelings of mutual disgust; and it is probable that Pope’s intimacy with Warburton in his last days mainly contributed to alienate him from his older friend.

One of the most important services which Warburton owed to Pope, was his introduction to the house of Ralph Allen, Esq., of Prior Park, near Bath. This led to his marriage, in September, 1745, with Allen’s niece, Miss Gertrude Tucker, in whose right, on Allen’s death, in 1751, he became proprietor of Prior Park.

On Sunday evening, which he published from time to time must be passed over without notice. It may be mentioned, however, as illustrating the versatility of his powers, that one of his productions in 1742 was a ‘Sertation on the Origin of Books of Chivalry,’ which appeared in the second volume of his ‘Letters’ to Jarvis’s translation of ‘Don Quixote,’ and which Pope soon after told him he had immediately recognised to be his, exalminating, before he had only over two paragraphs of it, ‘Art Eramus sat Diabolosa.’ The same year he published ‘A Critical and Learned Enquiry into the Origin of the Phrases, Fiery, Devil, Fire, and Devil;’ and he also persuaded Pope to substitute Colley Cibber for Theobald as the hero of the ‘Dunciad,’ and to complete that poem by the addition of a fourth book.

In August 1746, Warburton’s reputation was now very great, was unanimously elected preacher of Lincoln’s Inn. Besides many controversial tracts and other minor pieces, the following eight or nine years produced his edition of Shakespeare, in 8 vols. 8vo., Lord Hurd’s ‘A performance of the British Saxon Chronicle,’ published in 1749; ‘The Life, and Writings, and Character of the Author.’ Meanwhile the late Dr. Parr, with no friendly purpose, had supplied the deficiencies of Hurd’s collection by the publication in Legems of the third volume of Campion’s Life, and a Warburtonian (Hurd himself), not admitted in their work. An 8vo. volume of ‘Letters from Warburton to one of his Friends’ (Hurd), appeared in 1749; and in 1814 another 8vo. volume was published by Mr. Kilve, containing ‘Life and Remains of Bishop Warburton.’ Many letters of Warburton’s, and also anecdotes of his life, which have not been collected, are to be found scattered over various publications. A portion of his correspondence which much known is contained in the ‘Account of the Life and
Ward, John, LL.D., was born in London, in 1679, and was one of the fourteen children of a dissenting minister of the same name, who was originally from Tysoe in Warwickshire, and died in 1717, leaving of his numerous family only this son and a daughter. Ward held the situation of clerk in the navy-office till 1710, when he opened a classical school in Tenter Alley, Moorfields. His first publication was an attempt at a uniform motion in some part of the system of a planet; and being capable of affording facilities in the determination of the true from the mean anomaly, it was adopted by other astronomers in that century; it has however no foundation in fact, and has been long since abandoned by astronomers.

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His principal publications, besides the tract already mentioned, were, a Latin translation of Dr. Mead’s ‘Discourse of the Deity,’ which appeared in 1722; a treatise, printed in Latin, on the principles of Punctuation, appended to an edition of the ‘Elementa Rhetorica’ of Vossius, printed at London in 1724; a new and very correct edition, with a learned preface, of Lily’s Latin Grammar, in 1732; an edition of Maximus Tyrius, published in 4to., in 1740, by the Society for the Encouragement of Learning, of which he became a member in 1736; ‘Lives of the Professors of Gresham College,’ folio, London, 1740; a new edition of Camden’s Greek Grammar, 1754; and ‘Four Essays upon the Public System of the World,’ 1766. After his death appeared ‘System of Oratory, delivered in a course of Lectures publicly read at Gresham College,’ 2 vols. 8vo., 1758; and his ‘Discussions upon several passages of the Sacred Scriptures,’ 2 vols. 12mo., London, 1774. He is also the author of many papers in the Philosophical Transactions, and of some in the ‘Archaeologia.’ And his literary assistance was liberally contributed to the publications of several of his contemporaries; such as to Ainsworth’s ‘Monuments KEMPiana,’ 1720, for which he supplied an elaborate dissertation on the Roman As and its parts, an essay on the vases, lamps, rings, and clasps of the ancients, &c. to HORSELEY’S ‘Britannia Romana,’ 1732, for which he wrote an ‘Essay on Peutinger’s Table, so far as it relates to Britain;’ the fourth edition of De Thun’s ‘Tracts,’ 1729; a treatise, called Buckleys three epitapls to Dr. Mead into Latin; to Ainsworth’s Latin Dictionary, both the first and subsequent editions; to the edition of Aelian’s ‘History of Animals,’ published by Abraham Grevius, in 1744; to the edition of Voet’s Maxima Romanorum Juris, published by Principal Wishart, of Edinburgh, in 1751; to PINE’S engraved Horace, 1733-97; &c. There are several letters to and from Dr. Ward in the ‘Original Letters of Eminence’ noted by Sir J. Ellis, printed by the Camden Society, 4to., Lon., 1843.

WARDS, COURT OF. The Court of Wards and Livery was established by the statute 32 Henry VIII., c. 46, to superintend the inquests which were held after the death of any person, whose tennage being by right of his or her husband’s service, for the purpose of ascertaining what land the tenant died seised of, who was his heir, whether the heir was an infant; and thus what rights accrued to the king in the shape of relief, primer assise, wardship, or marriage.

By the famous statute which limited to the members of the first Parliament of Charles II. (12 Charles II., c. 24), the Court of Wards was abolished, together with the feudal rights out of which that court arose. The preamble of the statute states that it had been intermitted since Feb. 24, 1649. [GUARDIAN.]

WARE, SIR JAMES, an Irish antiquarian. His father, Sir James Ware, a native of Yorkshire, went to Ireland in the time of Elizabeth, as secretary to Sir William Fitz-Wil- liam, 1st Viscount Warenne, and in 1568, was subsequently appointed auditor-general for the kingdom, and purchased considerable property in and near Dublin.

James, his eldest son, was born in Dublin on the 28th of November, 1594. In his sixteenth year he was entered at Trinity College, Dublin, and prosecuted his studies there for six years. Immediately after leaving college he married Mary, daughter of John Newman, Esq., of Dublin. By the advice of Ulster he devoted himself to the study of Irish antiquities. During a residence of some years in England on business, he contrived to sequester that primacy with other legacies, and of Sir Robert Cotton, by whose assistance he considerably increased his collection of manuscripts.

On his return to Ireland in 1620, he was knighted by the lords justices; and in 1632, his father dying suddenly, he succeeded both to his estate and the office of auditor-general. He applied himself assiduously to public business; obtained, in 1633, the confidence of Lord Wentworth (afterwards Earl of Strafford), and was by his advice created a member of the Irish House of Commons. In 1639 Sir James Ware was elected a member of the Irish House of Commons. When the rebellion broke out in 1641, he assisted the government not only by his personal services, but also by becoming surety for sums of money advanced to it. His principal objects were the support of the House of Commons, or either of the Popish or Protestant party, occasioned his being sent, in December, 1644, to inform the king, then at Oxford, of the real state of affairs in Ireland. He employed his leisure hours at Oxford in the prosecution of his antiquarian researches, and had the honorary degree of Doctor of Laws conferred upon him by the University.

The vessel in which Sir James Ware returned to Ireland was taken by one of the Parliament’s ships. He underwent an imprisonment of ten months in the Tower of London, and was released by an exchange of prisoners. In 1647 he was one of the hostages for the performance of the treaty by which the Earl of Ormond surrendered Dublin to the Parliament. He was deprived of his office of auditor-general, but allowed to reside in Ireland, till Michael Jones, governor of Dublin, taking umbrage at him, ordered him to transport himself beyond seas into any county he pleased.

He made choice of France, where he landed early in 1649, and continued to reside till 1651, when he obtained a licence from the Parliament to visit London on business. He resided two years in the vicinity of the metropolis, after the close of that period he was allowed to reclaim his estate in Ireland. He continued to lead a strictly private life till the Restoration, when he was reinstated in his office of auditor-general.

In 1661 the University of Dublin elected Sir James Ware one of its representatives. He was offered the title of baronet or viscount, but declined both. The Marquis of Ormond created him first commissioner of excise. He died in Dublin, on the 1st of December, 1666. He left two sons and an only daughter, and created Sir John Ware, 1st baronet, 1674. Sir James Ware’s more important works are—1. De Præsulis Hiberniae Commentarius, Dublin, 1665, fol. He has incorporated into this work two of his Latin tracts; the one containing the lives of the Archbishops of Cashel, and the other the lives of the bishops of Dublin, published in 1628.

2. De Hibernia et Antiquitatibus ejus Disquisitiones, London, 1654-8. Into this work is incorporated hitherto unprinted out of the Censurae monasterii de Ireland. 3. De Hibernia Historia et Antiquitatibus. 4. Renum Hibernicarum Annales, regnantium Henrici VII., Henrici VIII., Edwardo VI., et Maria, Dublin, 1662, fol. The annals of the reign of Henry VII. were first published in 1628. As the last remaining surviving part of Ware’s work, he published, with considerable additions, in 1739-40, by Walter Harris, who married a granddaughter of Sir James. (Biographia Britannica.)

WAREHAM, a market-town and parliamentary borough in the south division of the hundred of Winchfield Blandford in Dorsetshire, 10 miles from Poole, 18 from Dorchester, and 112 from London. It is within three miles of an arm of the sea, which forms a part of the bay called Poole Harbour. A town existed here in the time of the Britons, and it was subsequently occupied by the Romans. Two Saxon kings were buried here, Bathil, king of the West Saxons, and Edward the Martyr, whose remains were afterwards removed to Shaftesbury. The Bishops of Sherborne were created earls of Warwick by the Danes in the time of Alfred. A priory was founded at Wareham in the ninth century, and there are some traces of an ancient castle. The town was once much larger, and the entire area enclosed by the ancient earthworks is said to be one time occupied. But much of it is now covered with market-gardens. The two decayed parishes of St. Michael and St. Peter are now annexed to the parish of Lady St. Mary, and their churchyard is connected with the churchyard of the other persons still living. The three other parishes, Lady St. Mary’s, Trinity, and St. Martin’s, are now united, and form but one parish for ecclesiastical purposes. The church of Trinity parish is used for the national school; that of St. Mary’s is supplied by a curate; Lady St. Mary’s church is a large and very ancient edifice, and belonged to the priory. The value of the living is not returned in the Reports of the Ecclesiastical Commissioners. The parish is in the diocese of Bristol.
Wareham is said to be a borough by prescription, but this is doubtful. Hutchins, the historian of Dorsetshire, states that there was a mayor of Wareham in the reign of Richard II. In the reign of Queen Elizabeth a charter was granted, constituting Wareham a borough. A charter was granted in the reign of Queen Anne, which defined the constitution of the municipal body as consisting of a mayor, burgesses, and assistants burgesses. The borough Court of Record has fallen into abeyance since 1766. The boundary of the municipal borough comprises portions of the three parishes beyond the town and these parts are denominated the out-parishes. The town is not affected by 5 & 6 Wm. IV. c. 76, for the reform of municipal boroughs, and was therefore not to be called a borough from the reign of Edward I. to the passing of the Reform Act, under which it now returns one member: the adjacent borough of Corfe Castle, which returned two members, was disfranchised. The parliamentary borough now comprises both the in-parish parishes, and part of the chappelry of Arne in Trinity parish; the parishes of Corfe Castle and Bere, and parts of the parishes of East Stoke and East Morden. The population in 1831 was 3774, including 1703 for the old borough. The number of electors on the register in 1835-6 was 572, and 428 in 1839-40.

The neighbourhood of Wareham is flat and marshy, but the town is situated on an eminence between the rivers Frome and Piddle, over which there are bridges, one having five arches. The only method of warehousing at one end of town—quay from the sea, and those of 60 tons can approach within half a mile; three miles from the town, at the confluence of the Piddle and Frome, vessels of the largest size can anchor. Wareham is a member of the port of Poole. The principal soil is a mixture of clay found in the parish of Corfe Castle and in the neighbourhood, which is in demand for the manufacture of common earthenware in Staffordshire. The market-day is the Tuesday, and there are fairs for cattle, cheese, and hogs, in April, May, and September. A Rye southwest, a cattle-fair in the spring. The town is compactly built, with two wide main streets lying at right angles, and several smaller streets. In 1834 it was neither lighted nor watched. There are two public houses, one of warehouses, and one of corn. In 1833 there had been withheld for two or three years, according to the 'Education Returns' of 1833.

(Reports of Corporation Commissioners, Boundary Commissioners, &c.)

The system of warehousing is a custom's regulation, by which articles of import may be lodged in public warehouses at a moderate rent, not being chargeable with duty until they are taken out for home consumption, and being exempt from duty if re-exported. It affords valuable protection to the merchants and traders of Great Britain, particularly to the public revenue. Where no such system exists, the merchant must either pay the duty on every article immediately it is landed, or must enter into a bond with sureties payable at a future time. If he pays on arrival, he is liable to lose a large cargo, on which interest must be charged to the consumer until the goods be sold; or he must effect an immediate sale, perhaps at an inadequate price, or even at a loss, in order to raise the funds necessary to pay the duty. If he wishes to defer the payment until the market shall offer an advantageous sale, he may find it difficult to induce persons to become his sureties, and, when he has succeeded, he may involve them in ruin. The natural result of these difficulties is, that the re-exportation of articles of commerce, on which heavy duties are charged, and a monopoly is thus established, to the great injury of the consumer. The immediate payment of customs' duties also obstructs the carrying trade of a country, by making the re-exportation of articles of commerce, as well as expediting their arrival, very expensive. The first British statesman who proposed a remedy for these evils was Sir Robert Walpole, in his celebrated Excise scheme, in 1723. His object was to unite the Excise laws with those of the Custom House, and thereby obtain a small duty immediately on importation, and the remainder on being removed from the Excise warehouses for home consumption. Speaking of tobacco, he thus explained his proposal:—'If the merchant's market was consulted, it would be very easy to apply to the keeper, and take out as much for that purpose as he has occasion for, which, when weighed at the custom-house, shall be discharged of the three farthings per pound with which it was charged upon importation; so that the merchant may then export it without any further trouble. But if its market be for home consumption, that he shall then pay the three farthings charged upon it at the custom-house upon importation; and that then, upon calling on his warehouse-keeper, he may deliver it to the buyer, on paying an inland duty of 4d. per pound to the proper officer appointed to receive the same.' Walpole clearly foresaw the advantages of his scheme in 1723:—'I am certain,' he said, 'that it will be of great benefit to the revenue, and will tend to make London a free port, and, by consequence, the market of the world.' This wise plan, unfortunately for English commerce, was not permitted to be tried. [Weekly Register, July 1723.]

The advantages of the warehousing system were most forcibly pointed out by Dean Tucker in 1748, in his 'Essay on the Advantages and Disadvantages which respectively attend Great Britain and France with respect to Trade,' and afterwards by Adam Smith, in his 'Wealth of Nations,' but it was not established before 1803 (43 Geo. III., c. 132). The Acts by which warehousing is now regulated are the 3 and 4 Will. IV., c. 57; 4 and 5 Will. IV., c. 69; and 6 and 7 Will. IV., c. 136. The commissioners of the treasury are empowered to determine the ports at which goods may be warehoused, and the warehouses in which particular descriptions of merchandise may be deposited. The various regulations and restrictions under which warehousing is carried on, and the conditions under which the privilege is extended, are fully explained in Ellis's 'Customs, Laws, and Regulations,' vol. ii., pp. 240-377, edition 1841; and 'Yearly Journal of Trade,' for 1843, by Charles Pope, pp. 396-404.

Sir Robert Walpole's scheme was that the warehousing was compulsory, but, under the existing law, it is at the option of the importer. Amongst other privileges enjoyed by the merchant, he may remove the merchandise from one port to another, either by sea or inland carriage, to the end, and it is said to have sustained little or no loss in these removals, and it naturally becomes a question, Why should warehousing be confined to sea-port? It is obvious that the main object is to preserve the convenience to the merchants and traders of inland towns, and no reason can be assigned for not conceding it, except insecurity to the revenue. But if goods may be removed with safety from London to Hull, they could be removed from London to Brighton, or from Hull to York. Government would incur no expense in erecting warehouses, as they would be provided by private capitalists, in the same manner as the docks and warehouses in London, Liverpool, and the like. None of Commons reported in 1840, that the privilege of having bonding warehouses may be conceded to inland towns, under due restrictions and regulations, with advantage to trade and safety to the revenue; and since that time, the scheme has been promoted for carrying the scheme into effect.

The advantages of warehousing have been understood in various foreign countries as well as in England. So long since 1804, M. Turgot established it in France; but it was discontinued in 1809, except for merchandise imported from the East and West Indies and Guiana, or exported thereto. In 1805 the system was re-established in a more extensive manner, but was confined to certain sea-ports, until 1832, when it was extended to the interior. Warehousing both at the ports and at certain inland towns is permitted in Holland. In Belgium, Denmark, and other commercial countries the system has also been adopted. It has recently been proposed for adoption in the United States of America, and recommended not only on account of its importance to trade, but for a novel reason—its republican tendency. The President, in his message of December 1842, said that, without such a system of warehousing, the merchant capitalist, and therefore every man at home, would possess, after a short time, an almost exclusive monopoly of the import trade, and laws designed for the benefit of export thus operate for the benefit of the few. Similar systems have sprung up in all its tendencies.

WARGENTIN, PETER WILLIAM, a Swedish astronomer, was born at Stockholm on January 22, 1717. When he was only twelve years of age.
occurred a total eclipse of the moon, and the observance of this phenomenon is said to have inspired him with a taste for the sciences, which was cultivated by Dr. Leibnitz, and which was improved by his association with Klingenstierna and Celsius, by whom he was recommended to study the motions of Jupiter's satellites; and in 1741, on taking his degree of master in arts, he made a tour to Italy on the subject of those motions. Wargentin spent, in fact, the greater part of his life in efforts to correct the theory of the satellites; and, confining himself almost wholly to this branch of the science, the improvements which he made in it obtained for him the title of the first of the German astronomers.

On the death of Celsius, in 1744, he was chosen corresponding member of the Academie de Paris, and five years afterwards he succeeded Elivius as perpetual secretary of the Academy of Stockholm. In 1759 he was made a knight of the Polar Star, and in 1760 he was elected a fellow of the Royal Society of London. He was also a member of the academies of St. Petersburg, Göttingen, Copenhagen, Drontheim, &c., and his communications to these societies are very numerous. When he was a candidate for the professorship at Upsal, he delivered a discourse on the progress of astronomy since the commencement of the century; and in the 'Memoirs of the Academy of Stockholm' there are several papers by him on the population of Sweden.

It was during the American War that he wrote dissertations on the transits of Venus which took place in 1761 and 1769.

In order to determine the parallax of the moon, Wargentin made, at Stockholm, observations on that luminary simultaneously with the corresponding observations which were made by Dr. Bradley at Greenwich. Good House is, from a formal agreement made between the two astronomers previously to the voyage of the latter to the southern hemisphere; and from the observations so made the value of the parallax was correctly ascertained.

Wargentin married in 1750, and became the father of six children, three of whom survived him. He died December 13, 1783, leaving the reputation of having been a man of amiable manners and disinterested character. His decision of science interested his posterity in attention to a private affair, and it is said that, near the close of his life, he was in part indebted to his friends for the means of being extricated from some embarrassments into which he had fallen. The Academy aided him from its funds, and struck a medal with an inscription denoting its sense of his merit. It also procured for his family a pension from the government.

An interval of time in which the inequalities of the two first satellites of Jupiter are compensated, had been noticed in 1714 by Dr. Bradley, who observed it during use of the period; and Wargentin, apparently without any knowledge of Bradley's discovery, both found the values of the inequalities and the time of the compensation. With respect to the first satellite, the celestial astronomer introduced the constant of the equation, and an equation amounting to 3° 40', which he subsequently reduced to 3° 39', and whose period he found to be 437 da. 19 ho. 41 min.; and, with respect to the second, he introduced an equation amounting to 16° 30', whose period is also about 437 days; these empirical equations have been confirmed by the researchers of La Place, who have found that they constitute in reality two equations of the centre for those satellites. Wargentin also rectified the equation of Jupiter respecting the aberration of light, and that which depends on the eccentricity of Jupiter's orbit. His first tables of the movements of the satellites were published in the 'Acta Societatis Regni Upsaliensis, ad an. 1741,' and an improved edition was published by La Place in 1768. His tables of the comets and those of Halley and Flamsteed were collated by the late Mr. Colton, and the former one was found to be much more correct, and thus they became of great importance by affording the means of determining the longitudes of stations.

It is to be remarked that these tables were formed without the use of physical astronomical observations, which determined the motions of the satellites from a combination of all the observations of their eclipses which he could procure, and during the whole of his life he laboured to correct the errors which he discovered. He sent new tables of the third satellite to Dr. Makselye, who pub-

lished them in the 'Nautical Almanac' for 1771; and the Almanac for 1779 contains an improved edition of the tables of the second satellite.

WARHAM, WILLIAM, an eminent English prelate, was born at Okeley in Hampshire, in the latter part of the fifteenth century, and after receiving his school education at Winchester, he entered the University of Oxford, in 1470. Here he remained, having in due time taken his degree of L.L.D., till 1488, when he is understood to have been collated to some living in the church. Soon after however he is found to be practising as an advocate in London, and in 1489 practised as one of the Principal or Moderator of the Civil Law School in the parish of St. Edward's, Oxford. His first public employment, as far as is known, was the mission upon which he was sent, along with Sir Edward Poyninges, by Henry VII., in 1483, to Philip, Duke of Burgundy, to persuade him to exercise his influence to put an end to the support and encouragement given to Perkin Warbeck by Margaret duchess-dowager of Burgundy. Bacon, who, in his 'History of King Henry VII., gives a speech addressed upon this occasion to the Duke, which is called Sir William Warham, doctor of the canon law. Although his endeavours in this affair were attended with little or no success, he continued to rise in the good opinion of Henry, and was appointed to a number of important offices of state; and he was made master of the rolls this same year, keeper of the great seal in 1502, and lord chancellor on the 1st of January, 1503. In 1503 he was also made Bishop of London; and in 1504 he attained the summit of his career by being raised to the archbishopric of Canterbury.

Warham opposed the marriage of Catherine, the widow of Prince Arthur, with his brother Henry, both when it was first proposed in the time of Henry VII., and afterwards when it was carried on by Henry VIII. for the sake of the next reign. This brought him into collision with Fox, bishop of Winchester, whose rivalry and hostility were afterwards inherited by his protégé the famous Wolsey. This latter, now become the chief favourite of Henry VIII., was substituted for Warham as chancellor in 1510. Before and after this, there were many contests as to jurisdiction between the archbishop and the cardinal; but Warham lived to see the fall of Wolsey, and even upon that event, in 1529, to have the great seal again offered to him, although his advanced years induced him to decline it. He died at St. Stephens, near Canterbury, 23rd August, 1532, leaving the primacy open to the new faith and new politics of Cranmer.

The biographical sketch of Warham is drawn as follows, not perhaps without some natural party prejudice, by Burnet: 'He was a great canonist, an able statesman, a dexterous courtier, and a favourer of learned men. He always hated Cardinal Wolsey, and would never stoop to him, esteeming it below his dignity to humble himself before him. He was a zealous advocate to the learning of the schools as others were, but set up and encouraged a more generous way of knowledge; yet he was a severe persecutor of those whom he thought heretics, and inclined to believe fanatical people.' This last remark is founded on the part the archbishop took in the affairs of the Maid of Kent, to whose impostures, either from credulity or party spirit, he showed some inclination to listen.

Warham was a great friend and patron of Erasmus, who dedicated to him his edition of St. Jerome, and in his letters speaks in the highest terms both of the learning and abilities and of the virtues of the archbishop.

WARING, EDWARD, the son of a wealthy farmer who traded in fish, and was the principal owner of a manor at an early age a decided taste for geometry and algebra, he was sent, in 1733, to Magdalene College, Cambridge, where he made great progress in mathematical analysis. He attained the rank of senior wrangler, and took the degree of B.A. in 1737, when he turned one of the chairs of the Lucasian professorship of mathematics being vacant by the death of Mr. Colton, Waring became a candidate for, and succeeded in obtaining, that honourable post; he was also appointed by Wren a fellow of Corpus Christi College, and having, in order that he might prove himself to be qualified, published a portion of a mathematical work which he had commenced, a war of pamphlets on the subject of the work was, before the election, carried on between the two rival candidates and their friends. Waring not
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having taken the degree which was required by the statutes, a licence from the crown was obtained for the purpose of enabling him to hold the appointment.

In 1763, being the tenth year of his age, Mr. Waring was elected a Fellow of the Royal Society; and in several of the volumes of the 'Philosophical Transactions' there appear papers by him on subjects connected with the theory of equations, centripetal forces, &c. In the volume for 1779 is an account of his theory of light, which, when from an open fire is radiated from the burning fuel, instead of being conducted by the air, this heat, diminishing in intensity as the square of the distance increases, is very unequal, being too great at a small distance, and too weak at a greater; while when directed, or 'drest,' or 'drawn,' as the chimneys of houses are called, which feeds the fire with oxygen, acts like a chilling blast against the side of each person or object which is turned away from the fire. 

Strata of air unequally heated.—Be- 

cause of this, there arises from this circumstance—that the equatorial current, being colder and specifically heavier than the air previously in the room, occupies the lowest stratum, and subjects the feet to a 'cold bath,' which is frequently attended with bad consequences. Other objections are—the smoke and dirt arising from the use of open fires; the loss of time attendant on the care which they demand; the danger to property and to person which accrues from them; the necessity (until lately supposed to be indispensable) of employing climbing-boys; and many others.

Many contrivances have from time to time been brought forward to obviate one or other of these inconveniences. Count Rumford suggested the 'regular stove,' the peculiarity of which consists in narrowing the entrance or throat of the chimney, and placing a plate or grate so as to vary the size of the aperture; by this means, particularly if the opening be near the fire, the very hot air directly from the fire enters before it can mix with much colder air; this prevents the draught from being so strong as to lessen the chance of smoking. But the very circumstance which constitutes the excellence of this stove, viz. the rapid ascent of heated air up the chimney, illustrates the waste of the method generally by showing how much of the heating agent is lost. The almost infinite variety of open fire-places, both in the form of the grate itself and in that of the opening in which it is placed, have been introduced either for an ornamental purpose or for the prevention of smoking; for the other evils enumerated are more or less removable, the current of air through the stove, the new of air, and the suddenness of the currents which blow. These defects have led to the more extended use of Close Stoves.—The common Dutch stove is one of the simplest examples of a close stove. It generally consists of a cylindrical case of sheet iron, within which a hole of which is a grate for containing the fuel. There is an ash-pit beneath the grate, and three openings to the interior—one to the ash-pit, one for introducing the fuel above, and one leading to a flue or chimney. When the fuel-doors are closed and the door opened, each is then one aperture by which cold air can enter to feed the combustion, and another by which the smoke can escape. In this form of stove the heated iron core warms the air of the room by conduction rather than radiation, heated air remaining in the stove and raising the temperature of the room by convection, while cold air is heated in the flue or chimney. There is also great economy of fuel, and an absence of smoke and dust. On the other hand an inconvenience arises from the highly heated iron, the temperature of which is so great as to decompose—not the air itself, as is sometimes, but erroneously stated—but many of the heterogeneous particles always floating in the air. The air acquires a burnt and sulphurous odour; it exercises a dry and shrivelling effect on objects in the room, and often produces headache and giddiness to those who are exposed to it. In Germany the stoves are made on this principle, but are more ornamental in their character.

The Russians contrive their close stoves on a different plan, and brickwork is largely used. Instead of metal, as a means of making the heat less intense near the stove, and of keeping up a reservoir of heat after the fire is extinguished. The stove is built in an ornamental style, and consists of a box of which the lowest serves as the fire-place, and the upper ones as flues; and being composed almost entirely of brick and porcelain, the outer surface remains at a moderate temperature for a very long period.

A recent German stove, white or semi-white, is a more effective kind of fires in Russia, says—Wag great houses not a breath of cold is experienced. The rooms are heated by stoves, frequency and otherwise; being built in lower storey. 

...
over story, of pure white porcelain, in various graceful architectural mouldings; sometimes surmounted with classic figures or groups, openings, or with brass doors kept as bright as if they were of gold. In houses of less display, these stoves are merely a projection in the wall, coloured and crowded in the same style as the apartment. In adjoining rooms they are generally placed back to back, so that the same fire suffices for both. These are heated but once in the twenty-four hours, by an old Calibran, whose business during the winter it is to do little else. Each stove will hold a heavy armful of billet, which blazes, and is heated most meretriciously, when the ashes have been carefully turned and raked with what is termed an "open-gavel," or stove-fork, so that no unburnt morsels remains, the chimney aperture is closed over the glowing embers, the brass doors firmly shut, and the fire is in about six minutes in the hole. It is at the bottom indeed it never cools.

Modern English Close Stoves.—Within the last few years many forms of stove have been devised, with the view of obviating some of the objections urged against those used on the Continent. Where, as in a common German or Dutch stove, the burning fuel comes in contact with the metal of which the stove is formed, this metal becomes so highly heated as to produce upon the surrounding air the deleterious effects before alluded to. Dr. Arnot of Edinburgh first brought this subject to the attention in a particular manner to this subject. Having devised a new form of stove, he fully described it in a work published in 1838; but before publishing the book, he detailed the nature of the apparatus in a letter before the Royal Society, stating that, to use his own words, "as I had decided not to reserve for myself any patent right in the new apparatus, I might, by having numerous competent witnesses of what I had proposed and accomplished, prevent any misapprehension of my proceedings in appropriating them by patents, and thus coming between me and the public." The problem which Dr. Arnot sought to solve was, to obtain a considerable extent of surface heated not much above 200°, as a means of WARNING and POISON. The first cause of a large amount of heat was to be constructed, having a fire-box in its centre; and by certain arrangements for the admission of air and the emission of smoke, he kept the water always nearly at the boiling temperature. This apparatus being both expensive and difficult to manage, he disposed of the water, and surrounded the fire merely with a body of air. In the new form of stove, the fuel is put into a small fire-box, enclosed within a larger case of sheet-iron, the only opening of which is the case itself. Above, at which point the pipe is introduced, an air-hole beneath the grate, and a chimney for the exit of smoke, which chimney, being merely a metallic tube three or four inches in diameter, can be easily arranged in position. The interior of the outer case is divided into two parts by a partition so adjusted as to cause a continued circulation of the heated air within, and hence an equable heating of the outer case. The air vent leading to the fire is provided with a valve, by which the admission of air is rendered more or less abundant according as the fire is, or is less or more intense. It was one point in Dr. Arnot's system to make the stove a 'self-regulating' one, by providing apparatus whereby the valve would open and shut at the proper times to maintain any required temperature; and it suggests six or eight different modes of arrangement, from which the architect and the stove may each select. Dr. A. states: 'During the winter 1836-7, which was very long and severe, my library was warmed by the thermometer-stove alone. The air received no fresh air, and was lower or higher in temperature than the room by the amount of heat only.' The Chinese have been before us in this matter.

Warming by Heated Air.—In the arrangements yet described, the stove or fire-place is the element which is to be warmed, and its heating effects are calculated with respect to that room alone. A notable advance, carried to a great extent in the present day, is to have the fire in an outer or lower apartment, and to vary the heated air to suit the circumstances. As the provisions of the Chinese have been before us in this matter. In the better class of Chinese houses there hollow fluxes extending beneath the floors, and connected with a space constructed either against the exterior walls of the place to be heated, or else in an interior room adjoining. The fluxes are perforated with numerous holes, through which they give out the heated air and smoke to the whole of the under side of the flooring. This flooring consists of flat tiles or flag-stones nicely indebted to a prevention of the smoke or heated air from the fluxes beneath into the room. After circulating beneath the tiled floor, the smoke escapes by a chimney into the open air. In this arrangement, it is obvious, the apartment except for exposure to the heat from the warmed tiled floor to the air of the room; and as this conduction proceeds slowly, the tiles retain heat enough to warm the room hours after the fire has been extinguished.

Before the linked methods of warming factories came into use, Mr. Sritt, of Derby, devised a form of stove which, under various modifications, was called the 'cock-stove,' the 'Derby stove,' and the 'Helping stove,' forming his cotton-factories. In these stoves the flue was contained in an iron box, sometimes cylindrical, sometimes rectangularly; and at a certain distance from it, encompassing it on every side, was a thick casing or envelope, so that a body of air existed between it and the fire-box. The fire-box had three openings to the exterior, one to introduce the fuel, one for an ash-
and air-vent, and one for a chimney; the exterior envelope too had two openings, wholly distinct from the ones, to carry off heated air to the various rooms of the factory, and another to admit a renewed supply of fresh air. This form of stove under various modifications has been extensively employed, but it is now probably nearly superseded.

Dr. Tredgold describes an arrangement adopted in a church, which may perhaps be taken as a fair example of a numerous class of instances. The length of the body of the church is about sixty feet, and the breadth forty-five. This is warmed by two stoves about four feet high, made of cast-iron, fixed at either end of the church, and the smoke is led out of room, for the entrance of fresh air to the air-chamber, and for the exit of the heated air to perform its wonted office. The air-tubes, communicating with the air-chamber of the stove, are conveyed along the lower edge of the gallery of the church; and small branch pipes opening from them at regular intervals give out a stream of hot air which mingles with the cold air of the building. The fires are lighted about four or five o'clock on the Sunday morning, and the heat is left to the use of the occupant of the church as the season advances it is usual to light them earlier. From this time till the congregation assembles the fires are constantly supplied with fuel, and a supply of heat is thus kept up sufficient to warm the whole interior of the church during the time of divine service.

A stove such as the one just described is as likely to give a tainted and offensive character to the air as the common German stoves, unless a rapid current be kept up. Hence a change has been occasionally introduced, by having the outer casing and the air-chamber of Mr. Scott Russell, and to that end, making its dimensions much larger, an arrangement which heats the outer case less intensely, and provides a larger body of air heated to a lower temperature.

Warming by Steam.—The employment of steam-boilers in large factories, and the adoption by Sir W. Tredgold of the steam-heating apparatus, is one of the circumstances which have led to the very extensive adoption of the method of warming by steam. A marked difference is observable in the principle of this method, as compared with that of hot-air warming. The heated agent, i.e. the steam, is not permitted to mix with the air of the room which is to be warmed, but acts through the medium of the metallic tube which confines it, and which it raises to a temperature sufficient to warm the room; the air is then burnt without being mixed with the air.

The general arrangements of a steam-heating apparatus, as suggested by Mr. Scott Russell, are somewhat as follows: At a convenient part of the building, and as low as possible, there is to be placed a close steam-boiler of the ordinary kind, and having a large space attached to it, ready to be carried to the part of the building which is to be warmed. This small pipe should be pretty thick, and carefully rolled round with a bandage of flannel to the thickness of a quarter of an inch, and the boiler should be wholly covered with bricks and plastered over to keep in the heat. This smaller steam-pipe should have an area of one square inch for every six gallons of water that the boiler can boil off in an hour. Pipes of a larger size are to be laid round the sides of the building in such a manner as to allow a free circulation of warmed air to enter the room. Into these larger pipes the steam is to be conducted, and in them the steam will be condensed into water, giving out its heat to the colder air of the room which is in contact with it. The condensation in the pipes must be provided for, the purpose of bringing back this condensed water into the boiler, for which movement a gentle siphon is given to the pipes. The water thus returned, being again heated in the boiler and converted into steam, is conducted to the various parts of the building and give out its caloric to the room which is to be warmed.

The efficacy of this mode of heating depends on the great capacity for heat which steam possesses, a capacity equal to 1000° of Fahrenheit, or nearly 1200° of Centigrade, degrees of heat in becoming a pound of steam. Steam will thus communicate as much heat as a mass of red-hot iron; and it will have this advantage over the iron, that it can carry this heat a distance without a similar loss, because the heat, being latent, will not be given out until it arrive at its destination and become condensed, when the whole of its 1000° will be usefully applied.

The quantity of steam or pipe thus required. Dr. Arnott, after taking account the loss of heat through the thin glass of windows, the thick walls of buildings, and through various openings and crevices, arrives at the following result: — In a winter day, with the external temperature at 10° below freezing, to maintain in an ordinary apartment the agreeable and healthful temperature of 65°, there must be a quantity of steam per hour, that is about a foot high, rests on four balls, and supports a fire-box or furnace. Concentric with this fire-place is an outer case; the space between the two containing the air which is to be warmed. The usual adjustments are provided for the introduction of fuel and of air-vent to it, for the exit of smoke, for the entrance of fresh air to the air-chamber, and for the exit of the heated air to perform its wonted office. The air-tubes, communicating with the air-chamber of the stove, are conveyed along the lower edge of the gallery of the church; and small branch pipes opening from them at regular intervals give out a stream of hot air which mingles with the cold air of the building. The fires are lighted about four or five o'clock on the Sunday morning, and the heat is left to the use of the occupant of the church as the season advances it is usual to light them earlier. From this time till the congregation assembles the fires are constantly supplied with fuel, and a supply of heat is thus kept up sufficient to warm the whole interior of the church during the time of divine service.

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The efficacy of this mode of heating depends on the great capacity for heat which steam possesses, a capacity equal to 1000° of Fahrenheit, or nearly 1200° of Centigrade, degrees of heat in becoming a pound of steam. Steam will thus communicate as much heat as a mass of red-hot iron; and it will have this advantage over the iron, that it can carry this heat a distance without a similar loss, because the heat, being latent, will not be given out until it arrive at its destination and become condensed, when the whole of its 1000° will be usefully applied.

Dr. Tredgold wrote his treatise on 'Warming and Ventilating' about twenty years ago, employing the method of warming by hot air most extensively adopted; and he accordingly directed the chief part of his attention to the exposition of the principles on which that method rests. But the 'hot-water' method has been so far improved by the experience of the past few years, that at the present day be deemed the favourite one for public buildings, halls, and large apartments where steam-boilers have not been previously employed for other purposes.

The principle on which the hot-water method is founded.
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is different from all the others which have passed under our notice. When a vessel of water is heated, the water does not become hot by the conduction of caloric from particle to particle, but from the ascent of heated particles from the bottom, where we suppose the heating agent to be applied, to the upper strata. This is proved from the circumstance that if heat be applied only to the surface of the water in a vessel, it is by extremely slow degree that the colder particles at the surface descend to supply their place; and hence a series of ascending and descending currents ensues. If, instead of leaving the heated water only in a vessel, it ramify also through closed tubes connected with the vessel, the ascending and descending currents may be passed through different parts of a building, and from the room where the vessel itself may be placed.

The heat, rising, to 212°, or to any temperature depending on the fire to which it is exposed, gives out heat to the metallic pipe through which it passes, and this pipe again communicates heat to the air of the room. Hence the operation of this method of warming depends on the circulating, or ascensive and descensive property of heated water, by which the portions of pipe furthest removed from the fire become as much heated as those in its immediate vicinity.

Vessels provided to be warmed are on one level, an open boiler may be used; but where it is necessary to carry the pipes to different floors of a building, some of them much above the level of the boiler, the building must be constructed with closed tubes. Whatever kind of boiler is employed, a pipe branches out from the upper part of the side, extends horizontally through the rooms to be warmed (without in any case rising above the level of the water in the boiler), and returns again to the boiler, which it enters at a lower level than the other. Under this arrangement a current of heated water will flow from the boiler at the upper orifice, and, after traversing the tube, return to the lower orifice.

The closed boiler is however more extensively useful, air varies its temperature of 40°, or 5 cubic feet of fresh air per minute for each individual in a room artificially lighted, of course involves the condition that an equal quantity of vitiating air per minute must be allowed to escape, and, the inquiry naturally follows—How long will a cubic foot of fresh air occupy in escaping through an orifice of a certain size? Carbonic acid gas is heavier than atmospheric air; but there are three circumstances which render required air rather lighter than the general air of a room, viz., the existence in it of nitrogen and vapour, both of less specific gravity than the air, and the vitiating air which escapes from the air of the room. From these circumstances combined, it is found that required air ascends to the upper part of the room; and it follows that the ceiling or some neighbouring part is the proper place for an outlet.

Practice of Ventilation.—In nineteen-twentieths of all the buildings constructed, there is no account whatever taken of the means for insuring ventilation. The fire-
are constructed, the windows fixed, and the doors hung without a thought being paid to the means of effecting a communication between the air contained within the apartments. But it is probable that in most English rooms, provided they are with tolerably large open fire-places, and with doors which are frequently opened, the ventilation is sufficiently complete. The fresh air enters the room by the open window or door, and that has been shown sufficient to prevent much, if any, ventilation, which may exist at a small height from the floor; while the vitiated and specifically lighter air escapes partly up the open fire-place and chimney, partly near the upper extremity of the open doors, and partly by crevices around doors and windows.

In crowded rooms however, where the amount of vitiated breath bears a much larger ratio to the cubical contents, and where the doors are generally small compared with the height of the room, the impure air cannot escape by these means, and some arrangements must be made near the ceiling for the removal of the air. These methods are chiefly of two different kinds, the one by the use of a revolving wheel or fan, and the other by the action of a chimney.

We sometimes see one of the upper panes of glass removed from a window, and its place supplied by a revolving fan, as a means of ventilating the apartment. This fan or wheel is provided with null formed like the sails of a wind-sail, or the blades of a screen-propeller, so that any force which sets the wheel in motion will cause a current of air to pass obliquely between them. But in this case the fan is made to revolve merely by the impulse of the air itself, and is not under the control of the inmates of a building, the latter complete opening doors and air-passages by the arrangement of the large cotton-mills of the North.

The observation has been correctly made, that the first accomplishment of perfect ventilation for a crowded place was not, as might have been anticipated, in the houses of the great and learned, and therefore in our houses of parliament, or in the churches of the wealthy, or in fashionable assemblies of any kind, but in the cotton-factories.

The same cause, which goes far to explain the general adoption of steam-warming in factories, will probably be available for the wider diffusion of ventilating apparatus, while the boilers of a steam-engine furnish the requisite steam in the one case, the power engendered is applicable to the fan in the other.

A fan or wheel, fan-ventilator, or wind-fan (for by all these names the contrivance is known), being placed in any convenient position, is set in motion by the steam-engine of a factory, and by its rotation discharged the vitiated air from a series of rooms with great rapidity. Dr. Ure ('Philosophy of Manufactory') gives the following description of one variety of wind-fan used in the factories. It consists of two cast-iron end-plates, A A, having a central circular opening, c c c, from the circumference of which the outline of each plate enlarges spirally, the point nearest the centre being A A, and that nearest the end of the fan being B B (Fig. 1). These two parallel plates are connected by bolts, a a a; a mantle of sheet-iron being previously inserted into grooves cast in the edges of the end-plates so as to enclose a cavity with an elongated outlet at B, to which a pipe is attached for carrying off the wasted air in any direction. Within this cavity a shaft C revolves, in bearings b b, placed centrally in the frame-plates A A, and cast in the same piece. On this shaft a boss is wedged fast, bearing five flat arms, c c c, to which are riveted five flat plates, or, wires, of the shape shown between a and a (Fig. 2), having a semi-circular piece cut out from them each side, about the size of the end openings. On one end of the shaft C, beyond the box-bearing, the loose and fast pulleys D are fitted for receiving the driving-band, and for turning the wings in the direction shown by the arrow. Thus the air is driven before them B B, and emerges from the five openings at c c c (Fig. 1). By the centrifugal force of the revolving wings, the air is condensed towards their extremities, and makes its escape from the pressure through the orifice B, while it is continually drawn in at the sides by its tendency to restore the equilibrium. Dr. Ure says that 'when such a fan, placed at the one end of an apartment about two hundred feet long, is in full action, it throws the air so powerfully out of it as to create a draught at the other end of the apartment, capable of keeping a weightted door shut at will.'

An account was given in the London Journal of Arts, 1842, of the method adopted in warming and ventilating the Reform Club-house, which illustrates our present subject. A steam-engine works a revolving fan, capable of throwing ten thousand cubic feet of air per minute through a subterranean tunnel under the basement story; and the steam of condensation, from the small steam-engine which works the fan, supplies three cast-iron chutes with the requisite heat within the building.

The second mode of effecting ventilation, viz. by the use of a tube or chimney opening into the air from the upper part of an apartment, depends for its action on the ascending power possessed by a lofty aerial column. As a draught-actuated chimney will elevate the air in the room, it follows that if the chimney is made to carry off impure air more rapidly than a low room, and in many of our public buildings this arrangement is deemed sufficient. In the Reading-room at the British Museum, for example, the arrangement of the openings of the windows has been vitiated, independent of the operation of doors and windows, are these:—A current of cool air sets in from the stone vaults or passages beneath, through a hole or holes in the floor of the room, and in the lateral ventilation, from whence it finds entrance into the room through the eight coil-tube pedestals. If the weather be cold, and the pipes be filled with hot water, the air, passing thus around and between the pipes, becomes warmed, and enters the room at a temperature sufficient to warm the whole contents; but if the weather be warm, and the pipes contain no hot water, the air passes by the pipes without being affected by them, and enters the room at its natural temperature. The air, after being vitiated by a draught, carries along with it vitiated air, and escapes through circular ornaments in the ceiling into a horizontal tube between the room and the apartments above, and finally escapes into the open air.

The temporary House of Commons is an example of ventilation by a beneficent draught caused by a lofty chimney. By the side of the building has been constructed a large circular chimney, 120 feet high, 11 feet wide at the bottom, and 8 feet at the top, with a fire-plate near the bottom having 25 square feet of bars or surface. This chimney is connected, by a tunnel leading from its base, with the interior of the house, and is intended solely to remove the air from the house. Beneath the air-chamber and in connection with the room containing the hot-water apparatus, the house is warmed by a heated wall through which fresh air enters from Old Palace Yard. Three sets of folding-doors are so arranged that the air thus admitted can be wholly or in part allowed to pass through the hot-water room, or kept wholly free from it, according to the season of the year; so that it may be employed to enter the body of the house at any required temperature. The air thus admitted, after passing through the air-chamber into the house, and becoming vitiated by respiration and combustion escapes through apertures in the ceiling into a receptacle above, where it might be made to discharge itself into the open air. But in order to render the ascent of the air certain at all times, the upper receptacle is connected by a descending, and with an upper and a large fire-box made in the chimney, the high column of heated and rarified air engenders such a powerful draught as to blow out the whole of the air from the body of the house. There were some parliamentary papers presented to the House of
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As relation Venti-Piantte Accurate it' curious, and but Leslie natural vated queathed to sixty remark of compiler the thing of

Dr. Warner advocated, which is the patent to be kept down by. It has had also a great reputation for the cure of cancer, but, like all other vaunted remedies for the cure of this disease, it cannot be relied on.

This plant was introduced into Great Britain in 1750, but being difficult of cultivation, it is seldom seen. It may be propagated by dividing the roots in spring or by sowing the seed, and must always be grown in a moist shady situation, as exposure to the sun will destroy it.

WARING, a mode of producing a deposition of the earthy matter which appears in rivers in which the current is frequently changed by the rising and falling of the tide. This causes a stirring of the water, which prevents the finer particles from being deposited. It is only necessary to produce a stagnation of the water for a few hours to have a certain deposit. Lead is commonly used for this purpose.

On the low flats which border the mouths of rivers, occasional inundations often cause a deposit which is highly fertilizing. Thus the polders in Holland and Friesland have been formed by the mud of large rivers, and, being dried and kept dry by dykes and shingles, have formed the most fertile soils.

Warping is an imitation of this natural process:—A bank of earth is raised along the course of the river, so high that the flood water, which has a more rapid course below this dyke is a sluice for the double purpose of letting the water and letting it out at pleasure. When the tide is setting in and counteracting the natural current of the river, the sluice is opened and the water flows in by one or more canals, the charge of water is raised by means of the lower lands, and covers it to the depth of high-water. The sluice is now shut, and the imprisoned water, becoming stagnant, deposits all the mud which it held suspended before. The sluice is opened at low-water, and the water is allowed to run out slowly, the mud or sediment, which hardens and dries rapidly. This operation is repeated until a thickness of several inches of new soil has thus been warped, when it is allowed to dry, and then ploughed and cultivated like any other field. It takes the same time to prepare any course of warped land as it first it looks barren mud; but it soon dries to a better texture, and ultimately produces very extraordinary crops. If its fertility decreases, and its surface is still below high-water mark, further measures will be taken. It is said that the Marshal Napier, in India, immediately restores the fertility. What is curious, is the almost total absence of organic matter in the warps, or rather, its intimate combination with the earth, so that it is not readily separated from them. It is neither like clay nor sand, but something between the two, soft to the touch, but not hardening into lumps when dry: neither very porous nor very retentive of moisture. The principal earth is silica in a very fine state. It generally contains a portion of calcareous matter, probably from comminuted shells. It has a whiter colour at the surface, it is easy to prepare, but it soon dries to a better texture, and ultimately produces very extraordinary crops.

The principal expense in warping is the sluice, and the channel through which the water is conducted over the land; the longer the water is kept above high-water mark, the better is the warping. The sluice is deposited in the channel, which has sometimes to be dug out. Accurate levels must be taken, or much expense may be incurred uselessly, if the water will not cover the land, otherwise it will not stick there.

It is of little consequence what the soil was originally; for a new soil is deposited over it. It should however not be too wet nor marshy: a porous soil is best, as this becomes the subsoil. All the inequalities which existed before are obliterated by the water, which fills up all cavities, and leaves a perfectly level surface. At an outlay of 2000l. a surface of 300 acres has been warped, increasing the value of the land more than 10,000l. in the course of four years—a very profitable speculation.
tuality of warped land naturally leads to the conclusion that silica, in a very comminated state, becomes best adapted for the roots of plants to shoot in and to supply them regularly with the moisture necessary to their vegetation, and that their chief nourishment is derived from the atmosphere, since very little organic matter can be detected in warp, and few mineral substances besides the earths.

**WARRANT.** A warrant is a delegation by A, who has power to arrest, to bring certain persons into effect, either to the custody of A, or to the custody of B. Thus a man having, of course, power to set in and manage his own concerns, may give a warrant of attorney to another to set or manage on his behalf. A sheriff who has power to arrest, &c., may give a warrant to his bailiff to arrest the objects of his jurisdiction. An officer of justice upon his warrant may give a warrant of distress to another for that purpose: A magistrate who has authority to bring before him persons who are within his jurisdiction, and who have committed certain offences, may make a warrant to others to do that act. A warrant, which should be in writing, ought to show the authority of the person who makes it, the act which is authorized to be done, the name or distinct description of the party authorized to execute it, and the party against whom it is made; and in criminal cases the grounds upon which it is made. The sense in which the word warrant is more generally known relates to criminal matters. A justice of the peace has power within his own jurisdiction to apprehend any person whom he has reason to believe is guilty of a trespass which he has jurisdiction. He may also verbally direct, that is, give a verbal warrant to others to arrest such person in his own presence. He may also give a warrant in writing to apprehend in his absence such person, or any person merely in the name of the justice of the peace, of which the instrument to the information of others. The warrant should always be under the hand and seal of the justice. It should be addressed to the constable or constables, or to some private person by name, and the constable or private person who has the warrant shall bear present in his own absence; and the justice's jurisdiction will not be liable for any of the consequences of obeying a proper warrant. The warrant shall name the person against whom it is directed. A warrant to apprehend all persons suspected, or to arrest any one person in general, is a danger of pointing out the individual person to be apprehended; it is vested in the justice, not in the officer. The law as to this was expressly laid down by Lord Mansfield in the case of Money v. Leach, 3 Bur. 1742, where the warrant, being of the form called a general warrant, and of which there had been in use since the Revolution down to that time, directing the officers to apprehend the 'authors, printers, and publishers' of the famous No. 43 of the 'North Briton,' was held to be illegal and void. The warrant should also set forth the time and place of making the commitment to be made. A warrant may be to bring the party before the justice granting it, or before any justice of the same county. A warrant of a justice of one county cannot be executed in another unless he is requested by the justice of that other county, and the same provision has been also enacted with respect to warrants granted in any one of the three kingdoms, and requiring to be executed in any other. But a warrant granted by one of the judges of the Court of Queen's Bench is tested in England, and may be executed in any part of the kingdom. A warrant is in force until it has been executed, if the justice granting it be still alive. An officer to whom it is addressed is indubitable if he neglects or refuses to act upon it; it is, in that event, a lawful and legal refusal of time, and in breaking open the doors of a house, but he ought first to make known to those within the cause of his coming, his authority, and to request their assistance. After the party is apprehended, the officer ought forthwith to present the warrant to the justice, and, if the justice be satisfied that the warrant is a legal one, he shall authorize the apprehension. Much of what has been said as to a warrant of apprehension is equally applicable to a Warrant of Commitment, which is the document by which a justice authorizes a commitment of a party to prison, pending a summary punishment or until his trial. The same matters are essential as to showing the authority, the parties, the cause, and the purpose of the warrant, and these latter should appear distinctly, be lawful, and not be in the disjunctive. A Summary is a document which authorizes a search to be made for stolen goods. (Burn's Justice.)

A Warrant of Attorney is an authority by which a man authorizes another to do an act for him, on his behalf, or as his agent or deputy. [Letter or Power of Attorney.]

But the term is most commonly applied to cases where a party executes an instrument of that name, authorizing or other to confound judgment against him in an action for a certain amount named in the warrant of attorney. It is generally given as a security by one who is, or is about to become, the debtor of another. The advantage of it is, that, by putting this power into effect, he prevents his debtor from selling his debtor at once, and has all the advantages of a judgment creditor, without the risk, delay, and expense of an action. There is frequently a condition attached, that it shall be defeased and become void upon the making or execution of payments, or other duties, demanded by the warrant; in such cases it is necessary that the defences, or condition, shall be written on the same paper or parchment as the warrant of attorney, and a copy of the whole filed in the Court of Queen's Bench within twenty days after the execution. Otherwise, in case of bankruptcy or insolvency of the party making the warrant of attorney, it will be void as against his assignees. If a warrant of attorney is more than one year old, and less than ten, leave must be obtained by a motion during term, or from a judge during vacation, to enter up judgment upon it; if ten years old or more, by a rule to show cause. Many other regulations and restrictions exist respecting the operation of this kind of instrument, but they are of too technical a nature to be here discussed.

**WARRANTY.** 1. The doctrine of warranty of lands was formerly one of the most important parts of legal learning, but the effect of warranties having been gradually reduced within very small compass, the subject has lost much of its importance, and those who would properly understand the English law of real property to pay some attention to this difficult subject.

Warranty existed in the civil law, and was defined to be the obligation of the seller to put a stop to the eviction and other troubles which the buyer may sustain in the property purchased. By eviction is meant the loss of either the whole or a part of the property by reason of the right of the party disposing of the property being subsequent to those which, without affecting the property of the thing sold, diminish the beneficial interest of the purchaser, such as a claim to a usufruct, or a rent issuing out of the lands. This warranty was either in law, being that security which every selling of a term, or from a judge during vacation, to enter up judgment upon it; if ten years old or more, by a rule to show cause. Many other regulations and restrictions exist respecting the operation of this kind of instrument, but they are of too technical a nature to be here discussed.

Warranty of lands in the English law is of feudal origin, and is derived from the obligation of the lord to defend his tenant's title against all claimants. If the tenant was evicted by another he must be restored to his possession by giving him other lands of equal value. Every tenant holding of his lord's time out of mind, by what was termed homage ancestral, was entitled to this warranty. The statute of the 18th of Edward I., commonly called the statute of Quia Emptores, which prohibited the practice of subinfeudation, and authorized the free alienation of property, put an end to the homage ancestral, and consequently to the implied warranty annexed to it. To avoid the effect of this, when the lord aliened, the tenants, before they left himself, reserved or reserved to himself a certain sum of money, which he might, on the death of his ancestor, have entered upon any lands aliened without his consent, the covenant of warranty descending upon the heir operatively as a confirmation of the title, and thereby obliging the heir who evicted him to yield the grantee a recompense in lands of equal value. This doctrine, it is said, was founded on the supposition that the ancestor would not wantonly disinherit his heir, who therefore was entitled to a recompense of the money which had purchased land, and that this equivalent descended to the heir, together with the ancestor's warranty.

P. C. No. 1689.
Warranties are of two kinds: first, warranties in deed, or express warranties; and secondly, warranties in law, or implied warranties. A warranty in deed, or express warranty, can be properly understood only by the use of the word warrant, or warranty. Warranties in law were so called because they were legal warranties without the use of the word warrant. If, after a partition or exchange of lands of inheritance, either party or his heirs be evicted of his share, or his interest in the land thereby lost, and upon a gift in tail, or lease for life, rendering rent, the donor, or lessor and his heirs, are bound in law to warrant the title. Warranty in deed was either lineal or collateral. Lineal warranty was where the heir derived, or might be an heir, and was held so long as his title remained, and if the land neither was nor could have been derived from the ancestor who made the warranty; for instance, where a younger brother released with warranty to the disseisor of his father, and then died without issue: this was a lineal warranty to the ancestor's estate. But if the conveyance to which the warranty was annexed followed immediately upon a conveyance, in the same cause, as where a man who had no right entered upon lands and made a conveyance of them with warranty, or where a father, being desirous to sell the same lands to two sons, made a conveyance in fee with warranty; this, which was in its commencement founded on the wrong of the warrantor himself, was called a warranty commencing by discession, and was not held binding on the heir of the tortious warrantor.

The obligation of the heir in both lineal and collateral warranty was founded on the supposition of his having other sufficient lands or assets descending to him from the warranty, or the owner thereof. The heir who bought without land had assets to insure the title of the alienee; yet in the case of estates in fee simple, the heir was barred by lineal warranty from claiming the estate, whether he had assets or not, on the ground that, by establishing his claim to the estate, he deprived the vendor of the gain made by him, and would thereupon become bound to fulfill his ancestor's warranty. But the rule did not extend to estates tail, the right to which was not barred by warranty unless the heir actually had assets in fee simple from the same ancestor, nor were estates tail, under warranty, subject to the same hardship and inconvenience of this doctrine with respect to collateral warranties were found to be so great, that various statutes were from time to time passed to restrain its effects. The statute of Gloucester, Edw. 1., c. 5, declared that a warranty of lands by a father, tenant in tail in fee simple, should be no bar to the son claiming his paternal inheritance, unless assets descended to him from the father. The 11 Hen. VII., c. 20, enacted that notwithstanding any hereditary warranty by the grantor in the conveyance of the husband should not be barred, though he were also heir of the wife. And by the 4 & 5 Ann., c. 16, all warranties by any tenant for life were made void against those in remainder or reversion, and all collateral warranties by any person after the death of the tenant in tail, and no estate in possession, were void against the heir. As this last statute did not extend to estates of inheritance in possession, a tenant in tail in possession until lately might in some cases have made a good conveyance in fee simple by superadding to his grant a warranty, which, if accompanied with assets, barred the tenant's own issue by lineal warranty, and without them barred by collateral warranty such of his heirs as might be in remainder or reversion.

The doctrine of warranty was the foundation of the assurance by way of conveyance. [see ss. 44 & 45.] The use of warranties in conveyances has long been sup-

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so the seller refuses to receive them, they remain at his own risk.

There are certain rules which have been laid down with respect to sales of horses, one of the most common subjects of actions on warranty. The fact that what is termed a sound price is given for a horse, does not imply any warranty of that kind with respect to the health of the animal. If a horse has any disease, or has met with any accident which either does, or in its progress or results will diminish the usefulness of the animal, such a horse is unsound, and therefore a cough or temporary lameness which, though it may be curable and not permanent in origin, diminishes his present usefulness, is unsoundness. So any organic defect is unsoundness, and therefore a nervous horse cannot be considered sound. Roaring is unsoundness if it proceed from disease or organic defect; but crib-biting, it seems, does not with its private property a warranty that a horse was free from vice. A warranty of soundness is broken if the disease or defect existed at the time of the sale, though it could not then be detected, and should appear till some time afterwards. The question of the soundness of a horse is one measured within the province of a jury to determine, and therefore a court will not set aside a verdict on account of the mere preponderance of contrary evidence, nor on the ground of any mere suspicion of fraud. [Warren, p. 671; see Chitty On Contracts, 3rd edition, p. 347 et seq., and the authorities there cited.]

WARREN. A Free Warren is a franchise which gives a person the right to hunt without the aid of dogs, called game, within the precincts of a manor, or any other place of known extent, whereby the owner of the franchise has a property in the game, and a right to exclude all other persons from hunting or taking it. It is laid down by Sir William Blackstone, that originally the hunting and destroying game belonged exclusively to the king, and it is certain that this franchise, like that of a chase or park, must either be derived from a royal grant, or from prescription, which supposes a grant. The law is thus at the commencement of Bredon [1528], where it is stated that 'none can make a park, chase, or warren without the king's licence, for that is quod omnino et propter quod appertinet in proprias pecunias.' [V. Warren] that free warren was introduced into England by the Normans, and there are many instances of such grants by the English monarchs subsequent to the Conquest. It is now in the power of the owner to apprest, except by prescription, and even when held with the manor, it does not pass by a grant of the manor without the apportionment; nor, if it be held in gross, will it pass by a grant of the manor and apportionment. (3 N. & M. 671.) The right of free warren over the land of another might also arise under other circumstances, as when a man, having free warren over certain lands, alienated them, reserving the warren. (8 Rep. 108.)

A warren may lie open, and there is no necessity of enclosing it. The owner of a warren is entitled to have his dogs and hounds and the fowls of warren are partridges and pheasants, though some add quails, woodcocks, and water-fowl. (Termes de la Ley, 589.)

The grantee of free warren acquired thereby the right to appoint and keep at the time of sale the king called a warreneer, who is justified in killing dogs, polecats, or other vermin which he finds disturbing or destroying the game (Croc. Jus. 49), and by 21 Edw. I. s. 2, entitled De Malefactors,所有 forestier, parcer, or warreneer, and shall be the same as having in forests, parks, or warrens, who resisted and refused to render themselves.

The franchise of free warren has nearly fallen into disuse since the enactment of the modern statutes with respect to warrens.

WARREN, SIR PETER, K.B., was born in Ireland in 1703, and was descended from a family long settled in that country. Having gone early to sea, he received his first command in 1727, and had distinguished himself in various parts of the world, both by his good conduct and his good fortune, when, in 1746, he was sent out with a small squadron to surprise Louisbourg, the capital of Cape Breton. The town and the whole island surrendered on the 15th of June; and for this service Warren was immediately made a rear-admiral of the blue, and after his return home reassembled the beginning of his professional career. He was appointed second in command, under Anson, of a fleet sent out to intercept two French squadrons, the one bound for America, the other for the East Indies; when the former, whose object was the recovery of Louisbourg, was taken by him with the Medway, and, after the capture of Havana, was kept in the West Indies for some time. In 1747, he was appointed commander-in-chief of the British fleet and, after the death of Anson, was made admiral of the fleet, and in the autumn of 1747, in the height of a popularity to which he was contributed as well as by his public services, he had been returned to Parliament for Westminster. A few years after this, in 1762, the general estimation in which he was held brought him a more singular compliment—the inhabitants of Willesden, near the city of London, sent him their alderman, elected upon electing Warren, who had recently been made free of the Goldsmiths' Company, to the vacant post; the admiral declined the honour, and sent them a present of 1000. to purchase the money, thus proving to them his determination to persuade him to alter his resolution: it was in vain that he remonstrated with them; they persisted in their choice; and eventually he was obliged to pay the fine of 1000. to avoid serving. Warren died, after a short illness, on the 2nd of July, 1762, and was buried at Westminster, a monument to his memory being erected near his church.
The town is on the north bank of the Mersey, just above the junction of the Sankey Brook, which passes not far through the parish; and via the church and a row of streets irregularly laid out and narrow. The principal road between Liverpool and Manchester passes through the town, and formerly as many as seventy public carriages were running daily; but the formation of the Manchester and Liverpool Railway has almost entirely diverted this traffic. The streets are well paved, and lighted with gas; the houses are many of them old and additively built; but interspersed among them are a number of modern well-built habitations. The parish church was partly destroyed in the siege of Liverpool, and in 1799 a new church was erected. It is a large cruciform building of various dates, capable of accommodating nearly 1000 persons. The chancel is the most ancient part, and is a good specimen of decorated English character. The chancel arch is supported by four pillars, and the organ is placed in a fine lofty apartment.

Mr. Baines, in his 'History of Lancashire,' adduces evidence to show that Warrington was a Roman station, Verstum, the Varina of Ravennas; but the evidence is far from complete. In the time of the Conqueror the manor, called Wallintune, was held by the king, and the place then gave name to one of the three hundreds, now merged in that of West Derby. Warrington derived its importance from a ford over the Mersey, on the north side of which the town stands. At the end of the fourteenth century a bridge was erected, which was about a century after replaced by a more substantial one of stone. For this stone bridge one of wood on stone piers was substituted in 1812. In the civil war of Charles I. the earl of Derby, a Parliamentarian, was himself at one time in possession of a successful attempt, in March, 1643, the Parliamentarians from Cheshire, under Sir Wm. Brereton, and from Manchester, under Colonel Ashton, took the town in May or June that year. In the campaign against the Royalist Scots in 1645, Colonel Adolphus bought the town of the Royalists, strong, to surrender at Warrington. When Charles II. entered England, in 1661, he had a sharp skirmish at Warrington with the Parliamentarians under Lambert and at the same time was compelled to retire. In 1715 Sir George Booth, formerly a Parliamentarian, who had raised the royal standard, was stopped in his flight from Winnington Bridge, near Delamere Forest, in Cheshire, where he had been defeated by Lambert, by the Parliamentarians of Worthington, by a strong force in the Jacobite insurrection of 1715; and the bridge was cut down in the insurrection of 1745, to prevent the passage of the rebels. The duke of Cumberland passed through Warrington in his march to the north in 1746.

The parish of Warrington has an area of 12,263 acres, divided as follows:—

<table>
<thead>
<tr>
<th>Township or Chapelry</th>
<th>Area in Acres</th>
<th>Houses in 1831</th>
<th>Population 1801</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burtonwood, Chapely</td>
<td>4,250</td>
<td>143</td>
<td>147</td>
</tr>
<tr>
<td>Winwick, Southworth</td>
<td>3,041</td>
<td>125</td>
<td>130</td>
</tr>
<tr>
<td>Orrell, Runcorn, Merdith</td>
<td>2,576</td>
<td>108</td>
<td>154</td>
</tr>
<tr>
<td>Warrington, Rosehill</td>
<td>2,550</td>
<td>102</td>
<td>158</td>
</tr>
<tr>
<td>Warrington, Iris</td>
<td>2,500</td>
<td>107</td>
<td>162</td>
</tr>
<tr>
<td>Warrington, Atton</td>
<td>2,460</td>
<td>103</td>
<td>166</td>
</tr>
<tr>
<td>Warrington, Levenshulme</td>
<td>2,460</td>
<td>103</td>
<td>166</td>
</tr>
</tbody>
</table>

The town of Warrington was made a parliamentary borough by the Reform Act, and returns one member. The borough includes the township of Warrington and that of Latchford, with some detached portions of the town of Warrington, and the Cheshire side of the Mersey: it has an area of 1010 acres, with (in 1831) 422 houses inhabited, 26 uninhabited, and 2 buildings.
together 450 houses, with 439 families and 2156 persons. The portions of Thelwall township (or rather chapelry) in Runcorn parish, also in Cheshire, which are included, have only two houses. The population of the parishes thus

brought by the census of 1831 was 18,184, exclusive of

those in Thelwall. The number of voters in 1835-6 was 577; in 1838-40, 633.

The living of Warrington is a rectory, of the clear yearly

value of £200, and is no reversion. The perpetual curacies of Trinity and St. Paul's chapels or churches, in the town,

are of the respective clear yearly values of 130L. and 160L.

Holinhall or Hollin large chapel, of 160L.; and Burton-

wood chapel, of 96L. The value of Taunton is not ret-

urned. The value of the rectory of St. Peter's, of Warrington,

and in the archdeaconry and diocese of Chester.

There were in the parish, in 1831, one infant-school, with

50 boys and 50 girls; forty other day-schools of all kinds, with

403 boys and 416 girls; and 32 scholar's where school was

established in the return; making a total of 1706 children, or

about one in eleven of the whole population, under daily

instruction. One of the schools was a free grammar-school,

well endowed, with 40 boys; two others were also endowed,

one of 60 boys and 60 girls; and another was a school of industry,

partly supported by subscription, with 100 girls. There were at the same time sixteen

Sunday-schools, with 1334 boys, 1308 girls, and 42 scho-

Iars of sex not distinguished, giving 2984 children, or about

one in seven of the population, under Sunday School

instructian.

About the middle of the last century an academy for

superior education among the dissenters was established

at Warrington; and several eminent men, including Dr.

John Aikin, father of Mrs. Barbauld; Dr. Enfield; Dr. Priestley; Reinhold Forster, the naturalist;

and Gilbert Wakefield, were engaged in conducting it.

It did not however succeed. During the continuance of

the academy several works were published at

Warrington, including Howard's work 'On Prisons,' Mrs.

Barbauld's 'Conics,' and some other poems, and 'Mount

Pleasant,' a poem, the earliest publication of the late

William Roscoe. Dr. Percival was a native of Warr-

ington.

There are a public subscription library, a mechanics' insti-

tution, and a dispensary. (Baines's History of Lancashire; Parliamental Papers; Clergy List; Pulpit, and Diocesan}

WARSOW, formerly the capital of all Poland, and now

of the kingdom of Poland, of which the emperor of Russia

is sovereign, and of the government Mazovia, is agreeably

situated on an eminence on the left bank of the Vistula, in

82° 20' 30" W. long. and 51° 47' 30" N. lat.; it is

itself, which is divided into the Old and the New Town,

and of several suburbs, among which Praga, on the right

bank of the Vistula, over which there is a bridge, is some-
times reckoned. The city is not regularly fortified, yet it

is a very strong citadel, which was erected, completely

commands it. The circumference of the city and

suburbs (including Praga) is ten miles, but there are many

gardens and fields in this area. The city itself is irregu-

larly built and the streets are narrow, but the suburbs, espe-

cially those called the New World and the Craweb

suburbs, are distinguished by their regularity and fine build-

ings; it is probably with these in view that Cannabich

says (in 1836) : 'Warsaw has latterly become one of the

largest cities of the world. An additional reason for this

change is the enlargement of the city proper, and the

inclusion of the suburbs; the mean wooden houses in the remote streets gradually dis-

appear, and others of stone take their place.' Among the

public buildings the most important are the Academy

of Sciences, which was transferred from Cracow to

Warsaw; 2, the Saxon palace, with a fine garden; 3, the

palace, formerly the residence of the prince, since

occupied by the commissariat department; 4, the Krasinski

palace, a very fine building, now the palace of the govern-

ment; 5 and 6, the palaces formerly belonging to Prince

Radziwill and Count Bruhl; 7, the university (now sup-

pressed); 8, the arsenal; 9, the new mint; 10, Marieville,

an imitation of the Palace Royal at Paris; 11, the military

hospital; 12, the railway station; 13, the Royal Mint;

14, the 100th palace of the Polish nobles; 14, fourteen

mons' and four nuns' convents (some of them have been suppressed)

with churches, and many other churches, a few of which

are remarkable; among them are the cathedral, the

church of the Holy Cross, that of St. Alexander (built

by permission of the pope), and the church of St. Nicholas in 1829, for the purpose of discharging the

national debt and promoting trade and commerce; a

founding hospital, six other hospitals, an agricultural academy, a deaf and dumb asylum, and numerous schools.
The capitular residence of the abbot of Warrington is

and probably amounts to nearly 150,000 inhabitants, of

whom 30,000 are Jews. The manufactures are of many dif-

ferent kinds, and the trade of the city is considerable,

being chiefly in the cloths and leather goods of the

place.'

It is a great impediment to the foreign trade that the

Vistula is in possession of Russia, and this impediment

will continue as long as Rusalia persists in its very vigorous

prohibitory system against commercial intercourse with

Russia.

Before the Cracow gate stands the gilt bronze statue

of King Sigismund III. on a marble column 26 feet high.
The emperor Nicholas caused a splendid monument to

be erected in the church of the Capuchins, in honour of

Charles John III. of Poland; in the same church.

In 1830 the statue of Copernicus was erected before

the palace of the Royal Society of Friends of the Sciences,

and that of Prince Joseph Poniatowski, who lost his

life in the battle of Leipzig, in the Cracow suburb, both

executed by a sculptor named Tatzkivnitsch, under the

direction of Thorwaldsen.

We have given a rather less detailed account of Warsaw

than of some other great cities; but it is in fact more easy

to say what Warsaw was than what it is; the changes made

in it are very marked, and especially the number of

pedestrian thoroughfares, which make the town more

numerous, and a system, the manifest tendency of which is to

Russianize Poland, is followed up with unremitting perseverance. The university was abolished in 1834,

and its library of 150,000 volumes and all its other valuable

collections transferred to St. Petersburg; the Academy of

Sciences is dissolved: the provinces, formerly called Woi-

wodship, are to be henceforth called governments, as in

Russia, and the Polish names for circles and districts,

Obwodi and Poweti, are changed for the Russian names, Ujedzi and Okrugii. 'Many changes in Warsaw and the

kingdom,' says a letter from Poland, of the 7th of May, 1843,

'indicate that the great measure of reform projected by

the emperor will be steadily carried into effect. The work

of Westernization is much pressed, and especially the

prohibitory system, and a law against Jews, has

one Polish institution, one Polish name after another dis-

appear. Measures, weights, money, the division of the

kingdom into circles and districts, the superintendence and

management of the roads and rivers, all are Russian.

Warsaw has become a splendid city; and the paraphernalia

daily concerns of life, and, however inconvenient and dis-

agreeable this may be to the people, they gradually be-

come used to it, and the great work advances. The Roman

Catholics complain to heaven of the measures adopted with

regard to the church in favour of the Greek religion; but

who shall put a veto on the imperial commands issued

from St. Petersburg? We even believe that a new allocu-

tion of his Holiness which should complain of further in-

fringements of the rights of the Roman church, would be

lightly thrown away at St. Petersburg, and give rise to

issue of further ukases. While the clergy, with much zeal, hold fast to the antient faith, the people appear in general to be indifferent. There can be no greater proof of the

strength of the Greek religion in Poland, than the fact that

Easter has been observed at Warsaw this year; it was an

exact counterpart of Easter at St. Petersburg; there were

games of all sorts, rope-dancing, puppet-shows, dioramas,

equestrian exercises, shows of wild beasts, springs, in a

word, everything to which a purely Greek population

was accustomed at that season. The people of Warsaw in
general were quite delighted, especially as spiritual liquors were not wanting; even the higher classes did not keep away, but beheld from their carriages the amuse-
ments of the people. We think the Roman Catholic clergy
felt it would not be easy to describe. On the 29th of

April, the birthday of the emperor's eldest son, the grand-
duke Alexander, was celebrated in the most splendid manner, by divine service in all the churches, a parade of the armed forces, a grand ball at the residence of the military governor, and a general illumination. The magnificent church of St. Borromeo, now building at Warsaw, is to be finished this year. It is enriched with marble and various ornaments, and will indisputably be 'the handsomest church in the capital of Poland.'

(Hamel, Das Ruinsche Reich in Europa; Brockhaus's Conversations Lexicon; Cannabich, Lehrbuch; Stein's Handbuch, by Hirschlomann; The Allgemeine Zeitungen oder Augsburg.)

Table of some of the principal Buildings at Warsaw.

<table>
<thead>
<tr>
<th>Date</th>
<th>Architect</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Church of the Holy Cross</td>
<td>1682-96</td>
<td>Aigner</td>
</tr>
<tr>
<td>Lutheran Church</td>
<td>fin. 1781</td>
<td>Aigner</td>
</tr>
<tr>
<td>Alexander Church</td>
<td>1814</td>
<td>Spieski</td>
</tr>
<tr>
<td>St. Andrew's</td>
<td>1823</td>
<td></td>
</tr>
<tr>
<td>Observatory</td>
<td>1818</td>
<td>Aigner</td>
</tr>
<tr>
<td>Exchange</td>
<td>1818</td>
<td>Aigner</td>
</tr>
<tr>
<td>Guard-house</td>
<td>1818</td>
<td>Aigner</td>
</tr>
<tr>
<td>University</td>
<td>1816</td>
<td>Spieski</td>
</tr>
<tr>
<td>Mint</td>
<td>1822-23</td>
<td>Lessel, Corazzi</td>
</tr>
<tr>
<td>Academy of Sciences</td>
<td>1822-23</td>
<td>Spieski, Corazzi</td>
</tr>
<tr>
<td>School of Fine Arts</td>
<td>1823</td>
<td>Spieski, Corazzi</td>
</tr>
<tr>
<td>Dominican Church</td>
<td>1818</td>
<td>Kubicki</td>
</tr>
<tr>
<td>Zamek, or ancient Royal Palace</td>
<td>1818</td>
<td>Kubicki</td>
</tr>
<tr>
<td>Riding-House</td>
<td>1818</td>
<td>Kubicki</td>
</tr>
<tr>
<td>Artillery Barracks</td>
<td>1818</td>
<td>Kubicki</td>
</tr>
<tr>
<td>Cavalry Barracks</td>
<td>1818</td>
<td>Kubicki</td>
</tr>
<tr>
<td>Government Palace</td>
<td>1823</td>
<td>Aigner</td>
</tr>
<tr>
<td>Palace, Minister of Finance</td>
<td>1822-23</td>
<td>Corazzi</td>
</tr>
<tr>
<td>Foundling Hospital</td>
<td>1824</td>
<td>Minder</td>
</tr>
<tr>
<td>Engineer and Artillery Schools</td>
<td>1823</td>
<td></td>
</tr>
<tr>
<td>Military Hospital</td>
<td>1818</td>
<td></td>
</tr>
<tr>
<td>Krasiński Palace</td>
<td>1870</td>
<td>Kramszteiner</td>
</tr>
<tr>
<td>Lazienka, Royal Villa</td>
<td>1870</td>
<td></td>
</tr>
</tbody>
</table>

 wart, the name of small tumours or excrescences which occur on the cuticle. Like all other epidermoid tumours, they are unorganized in their origin and course. They are generally of a conical form, embrace only a small extent of surface, are hard, insensible, and in colour are usually darker than the surrounding surface. In structure they have a radiated character. Their growth is slow, and they derive their nutrition from the crust over which they lie. The parts of the body on which the excrescences most frequently occur are the hands and face, although they are by no means confined to these localities. They are of an innocent character, and produce no ill consequences, except by pressure, when they occur in such parts as between the fingers and toes or on the eyelids.

When stimulated strongly, they generally get smaller or disappear altogether. Hence the best mode of treatment is the application of stimulants. It is however a curious fact that they often disappear under the use of the simplest remedies, when more violent ones have failed to affect them. The most effectual remedy is cutting them away. When this may be objected to, the caustic application is generally attended with silver, strong acetic acid, urausted tincture of iron, or by powder composed of abacetate of copper and salinum in equal parts, or the application of a hair-pencil dipped in sulphuric acid.

The thin integuments situated near the anus are often found to be the seat of excrescences having the character of warts. They are of all sizes, from a pea to an orange. When small, they may be removed by the application of the stimulants recommended above; and when large, they should be cut away with the knife.

WARTON, JOSEPH, D.D., was the eldest son of the Rev. Thomas Warton, professor of poetry in the university of Oxford, and afterwards vicar of Basingstoke, Hampshire, and Cobham, Surrey; and of Elizabeth, daughter of the Rev. Joseph Richardson, rector of Dunsford, Surrey. He was born at Dunsford, in the house of his maternal grand-father, in 1722; was educated, till he reached his fourteenth year, principally at home by his father; was then admitted on the foundation of Winchester College, where he was to Oriel College, Oxford, in 1740. Having taken his degree of B.A. in 1744, he was ordained to the curacy of his father's vicarage of Basingstoke; and here he officiated till he was removed, in February, 1746, on the death of his father to Chelsea, where he was curate for about a year. After this he held for a few months the curacy of Warton at Draycot in Hampshire, and then returned to Basingstoke. In 1748 he was presented by the Duke of Bolton to the rectory of Winslade, in the neighbourhood of Basingstoke, which he purchased for 100 guineas, and by which he was enabled to remove to London, and to become a resident of St. John's, Smithfield. He continued at Basingstoke his residence for four years, and then removed to London, where he became a resident of Lincoln's Inn.

After his return to England, Warton published an edition of Virgil, accompanied with a new verse translation of the 'Eclogues' and 'Georgics' by himself, and one of the
of Oxford. In 1750 he contributed a few pieces to "The Student, or Oxford and Cambridge Miscellany," amongst which was his "Progress of Discontent," one of the happiest of his humorous effusions. The next year he published his satire entitled "Newmarket," and some other pieces in verse. In 1755 he edited, with adding his name to it, a small volume, which appeared at Edinburgh, with the title of "The Union, or select Scots and English Poems," amongst which were several of his own, some predecessors published, some new. In 1754 he published, in an 8vo. volume, his "Observations on the Antiquity of the Poets of Spenser," a work which at once established his reputation both for true poetical taste and for extensive and varied learning. It was extended to two volumes in a second edition, which appeared in 1755.

In 1757 Warton was elected professor of poetry; and in the course of the lectures which he delivered while he held that office he introduced his translations of pieces in the Greek Anthology now printed among his collected poems, and also his dissertation on the "History of the Poets of the Greeks, which he afterwards prefixed, in Latin, to his splendid edition of Theocritus, published, in 2 vols. 4to, in 1770. In 1758 he published, in 4to, a treatise now become rare, entitled "Inscriptions Romanarum Monumentorum Delectus," which was translated into English by Dr. Johnson's periodical publication, "The Idler." In 1766 he published, in 4to, a "Companion to the Student, or an Account of the City, College, and Cathedral of Winchester." This was followed the same year by a poem of dexterity, entitled "A Companion to the Guide, and a Grales to the Commentaries," being a complete supplement to all the "Commentaries of Oxford Houses," published (in 1754), and which he went through three editions. Soon after this he wrote for the "Biographia Britannica" the life of his "Thomas Pope, which he engraved by Jones, in 1772 and 1774, with some additions, corrected and enlarged. In 1761 he produced, in an 8vo. volume, in Latin, "Institutiones Rerum Divaricatarum," which was afterwards translated by his brother, and published in 1772 and 1774. Next year appeared the second and more enlarged edition of "The History of the Poets of the Greeks," the first and second editions having been followed by an impression of the third edition in 1765.

In 1766 Warton became head master of Winchester College. He was created Bachelor of Arts and Doctor of Divinity in 1772, and in the latter year married Miss Lambourne, daughter of Robert Lambourne, esq., in 1772 he was translated to his present see; and then Bishop of London became a canon of Westminster Abbey, and was made dean of Westminster. In 1773 he received the living of Croydon. In 1774 he was created a baronet, and in 1775 a fellow of the Royal Society. After this he commenced a series of his works with his "Notices of the Colleges and Schools of the University of Oxford." In 1786 he published a "Select Collection of Poems," which was followed by a companion collection of English Poems. In 1788 he was created a knight of the Bath, and in 1789 he was made a member of the British Academy. In 1790 he was made a fellow of the Society of Antiquaries. He died in March, 1790. He was one of the leading spirits in the literary world, and was universally admired for his kind disposition and amiable manners. He left a very considerable fortune, and was one of the richest men in the kingdom.
unfinished: of the fourth volume only about ten sheets were found to be printed at his death, bringing down the history to the year 1170. This was the same Henry VIII. of the reign of Elizabeth. There have been two recent editions of it in 2 vols., with the addition of much new matter in the form of annotation, but without any continuation of the narrative: one in four volumes, by the late learned and accomplished Mr. Richard Price, London, 1834; the other in three volumes, forming a reprint of Mr. Price's edition, with additional notes, which was brought out by the care of Mr. Richard Taylor, in 1840.

Warton made a collection of those of his poems which he thought preserved, and published it in 1777; and other editions followed in 1778, 1779, and 1789. He was made poet-laureate on the death of William Whitehead; and the same year he was elected Camden Professor of History at Oxford, and engaged by Eng. Dr. William Scott (the late Lord Stow). In 1785 also he published an edition of Milton's Juvenile or Minor Poems, copiously illustrated with learned and curious notes, of which a re-impression, prepared before his death, appeared in 1791. A Life of Warton was prefixed to a new edition of his Poems, by Mr. Mant, in 1802.

Thomas Warton, having produced no poetical performance of any considerable length, can only be reckoned as one of the chief of the minor poets; but among those he occupies a high place—not in the first rank, with Collins and Gray, but perhaps in that next to them. His poetry, without including his Pindaric odes, which, although they are also superior to many, may be dispensed with in the estimate of his merit, possesses three qualities: the descriptive, the romantic, and the humorous; and in each of these kinds of writing he has shown much more than mere taste and imitative power. He had at least both the candid eye, if not much of the 'fine frenzy' of a poet, and wrote with much more ease, although he perhaps the most passionate, impulses. There are not many things of the kind in the language, except in Prior and Swift, better than his 'Progress of Discontent'; his lines 'To a Lady' and 'In the Midst of the Year' have much of the picturesqueness, as well as true natural feeling, of Milton's 'L'Allegro' and 'Il Penseroso'; and his tale, or ode, as he calls it, entitled 'The Crusade,' is perhaps superior to any preceding attempt to re-awaken the echoes of our ancient romances in English.

WARWICK. [WARWICKSHIRE.]

WARWICK, GUY, EARL OF. Several of our mediæval chroniclers speak of this famous personage as having without doubt actually existed: Henry Knighton, for instance, who was born about the year 1230, or four centuries before this, gives a full account of his story in his 'Chronica de Eventibus Angliae' (printed in Twysden's 'Scriptores Decem,' pp. 2311-2743). And even in modern times several writers have been inclined to hold that his exploits had probably some foundation; but the date of the 'Red Book of the Earl of Warwick,' which does not appear in the Barony; but in his 'Warwickshire,' although he acknowledges that the monks have sounded out his praises too hyperbolically, he considers his story to be not wholly legendary or apocryphal, and even takes pains to fix the date of one of his achievements, his combat with the Danish champion, Colbrand, the giant, that same mighty man, 'as he is called in King John by Shakespear, who has also allusion to the same matter in his Henry VIII.' This battle, as the year 1180 to the year 1187 which Guy conceives, was in the sixty-seventh year of his age. Much more recently, Mr. George Ellis (in his 'Specimens of Early English Metrical Romances') has suggested that possibly Egil, an Icelandic warrior, who contributed very materially to the success of the ancient victors in Iceland, and was the king Athelstan over the Danes and their allies at Brunanburgh, 'becoming the hero of one of the many odes composed on the occasion of that much celebrated battle, may have been transformed, by some Norman monk, into the picturesque and romantic figure of Guy of Warwick.' Mr. Price, the late editor of Warton's 'History of English Poetry' (ii, 2), 'at best is but conjecture, nor can it be considered a very happy one. ... The initial letters in Guy, Earl of Warwick, are the representatives of the Teutonic W, and closely point to some cognomen beginning with the Saxon Wæg (bellum). Guy, in fact, must be considered as a personage belonging not to history, but to fable and romance. Camden was perhaps one of the first inquirers among us, if not the very first, who ventured to intimate so much, when in giving an account of the earlier days of his 'Britannia' (Warrickshire) he wrote (as Bishop Gibson has translated the passage), 'To pass by Guar, and Morindus, and Guy, the echo of England [the Latin is, Anglicae tympanum, meaning rather the drum of England, that is, the most resounding of English names], with many more of that stamp, which the fruitful wits of those times brought forth at one birth.' Ritson, in his 'Dissertation on Romance and Minstrelsy,' prefixed to his 'Antient English Metrical Romances,' pp. 91, &c., has taken some unnecessary pains to establish the nonhistorical character of Guy.

Even as a hero of romance Guy can scarcely be traced with certainty to a more remote date than the earlier part of the fourteenth century. Guy of Warwick, Ritson observes, is mentioned by the English chroniclers Robert de Brune, or Peter de Langetoft, about 1340. Among the romances of price enumerated by Chaucer in his 'Rime of Sir Thomas, in the 'Canterbury Tales,' are mentioned those of Bevis and Sir Guy' (line 18,827). Bishop Percy, in his 'Reliques of Antient English Poetry,' prefixed to his 'Antient English Metrical Romances,' remarks (p. 33) that 'the Romance of Sir Guy was written before that of Bevis, being quoted in it.' In this place Percy gives an account of various manuscripts of the romance of Sir Guy, the manuscripts being chiefly connected with the story of Sir Tristrem. Percy (vol. iii., pp. 100-117) has published two old English poems, 'The Legend of Sir Guy,' and 'Guy and Amaon.' There are no extant detached remains of the descriptive, the romantic, and the humorous; and in each of these kinds of writing he has shown much more than mere taste and imitative power. He had at least both the candid eye, if not much of the 'fine frenzy' of a poet, and wrote with much more ease, although he perhaps the most passionate, impulses. There are not many things of the kind in the language, except in Prior and Swift, better than his 'Progress of Discontent'; his lines 'To a Lady' and 'In the Midst of the Year' have much of the picturesqueness, as well as true natural feeling, of Milton's 'L'Allegro' and 'Il Penseroso'; and his tale, or ode, as he calls it, entitled 'The Crusade,' is perhaps superior to any preceding attempt to re-awaken the echoes of our ancient romances in English.
burbury in 1469, and was killed at the battle of Barnet, in 1471; as a condition of his surrender having taken place, his honours were forfeited, and George Plantagenet, brother of King Edward IV., having married Isabel Nevil, his eldest daughter, was created earl of Warwick and Salisbury in 1472. Clarence was put to death and attained in 1478, and his son died in 1483, but his rule over Warwick till he also met with a similar fate in 1489. From this time there was no earl of Warwick till the honour was conferred by Edward VI., in 1547, upon John Dudley, Viscount Lisle, who was maternally descended from the Beauchamps, Plantagenet, duke of Clarence; Beauchamp, twelfth earl. Dudley (afterwards created duke of Northumberland) was attainted and beheaded in 1553; but his second son, Ambrose Dudley, after being restored in blood, was created earl of Warwick in 1584, and on the 5th of that month raised himself to the title of earl of Warwick till he remained until 1616, when it was revived and conferred by James I. upon Robert Rich, third Baron Rich of Northumberland, and he was restored (from 1679 in conjunction with the earldom of Holland) by the same family till the death of Edward Rich, earl of Warwick and Holland, without male issue, in 1729. Upon this event the earldom of Warwick was conferred upon Francis Greville, first Earl Brooke, brother of his father, and was held by the line of Earls Brooke and Earl of Holland until the latter part of the eighteenth century, when the title became extinct, the title being then assumed by the descendants of the former, conferred in 1744, by a few years of earlier date.

WARWICK, RICHARD DE BEAUCHAMP, EARL OF K.G., was the son of Thomas, eleventh earl, and of Margaret, daughter of William, Lord Ferrers of Groby, and was educated at the royal household himself in the service of the state. He succeeded to the title upon the death of his father in 1401. In 1417 he was created earl of Arundel for life. In 1425, having been sent over to France with a reinforcement of 6000 men, he was left by the king of France to act as regent of that kingdom during his own absence in England. While holding this post he carried on the war with great success, making himself master in the course of the next two years of the whole of the Conquest of France. On the return of the duke of Bedford to France in February, 1428, Warwick was called home by the English council, and appointed governor to the king, Henry VI., now in his seventh year, and lightho brought up under the care of the queen, Catherine of France. Warwick was the eldest son of Archbishop Vertou, and his mother was his cousin and heiress of Lord Willoughby de Broke and his wife, Elizabeth Beauchamp, who was descended from Walter de Beauchamp, baron of Alcester and Towyc, thirteenth earl of Warwick, the highest and earliest earl, and brother of William de Beauchamp, who became earl of Warwick in 1267. In this family the titles of Earl Brooke and earl of Warwick still remain, the latter, contrary to what is usual, being the one commonly used, although the former, conferred in 1744, is by a few years of earlier date.

WARWICK, HENRY DE BEAUCHAMP, EARL OF K.G., was the son of Richard, twelfth earl, whom he succeeded, and was educated at the royal household himself in the service of the state. This earl of Warwick, who was styled the Good, left by his second wife, Isabel, daughter of Thomas Despenser, earl of Gloucester, a son, Henry, and a daughter, Anne, who married Richard, elder son of Richard Nevil, earl of Salisbury, creating in 1414 earl of Warwick.

The history of this mighty peer is that of the whole of the contest between the two houses of York and Lancaster from the first armed rising against Henry VI. to the overthrow of the Lancastrian forces in the fight of Barnet. Here we can only briefly note the most important events that marked his career.

He is first mentioned as being one of the leading magnates of the house of York, and having taken part in the march of the Lancastrian forces in the fight of Barnet. He was then called Henry de Beauchamp, his bravery on this occasion earned him the title of earl of Warwick, which was confirmed in 1419.
took up arms in 1455, he was joined both by Warwick and Salisbury; and the battle of St. Albans, fought 22nd May, was mainly won by the impetuous valour of Warwick. Immediately after this, while the office of chancellor was bestowed by the parliament upon Salisbury, Warwick was rewarded with the governorship of the north, and the sale of public offices. Under the very long time after the defeat of the Warsash, the most important military charge in Christendom. To this was added two or three years subsequently by Henry, who perhaps wished to attach to himself so able and powerful a subject, the custody of the sea, or the command of the fleet, for five years. It was in virtue of the latter appointment that, on the 29th of May, 1458, he set out from Calais with five large and seven small vessels, and, attacking a fleet of twenty-eight sail belonging to the free town of Lëbeck, captured six of them after a contest of six hours. But before their next attempt in the summer of 1459, Warwick came over from Calais with a large body of veterans, with which he joined his father at Liddlow, a day or two after Salisbury's victory over Lord Audley at Bloreheath in Staffordshire; and in the beginning of June following Warwick again landed in Kent with a force of fifteen hundred men; before he reached London, according to all reports, nearly all of his former friends or men had flocked to his banner; the capital, from which King Henry had fled, received him with all welcome; the battle of Northampton followed, on the 19th of July, at which Henry fell into the hands of the Yorkists. The next month in this fluctuating struggle in the battle of Wakefield, in Yorkshire, fought on the 30th of December, where the duke of York was defeated by Queen Margaret, and lost his life, and where the earl of Salisbury was taken captive, and beheaded the next day at Pontefract; and the queen's second victory over the Yorkists, commanded in this instance by Warwick, at Bernard's Heath near St. Albans, on the 17th of February, 1461, which restored Henry to liberty. But the junction, immediately after this, of the forces of Warwick and the young Edward, earl of March, now duke of York, compelled the royal army to retire to the north; Edward, accompanied by Warwick, entered London in triumph; on the 4th of March he was proclaimed king, by the title of Edward IV.; and on the 16th of March the earl of Westmorland in Yorkshire secured the throne to King Edward. On this occasion the main body of the Yorkist army was commanded by the earl of Warwick; who also, during the next two or three years, while the contest still lingered, persisted in his turbulent and independent course. In the winter of 1462-3 he reduced the three strong fortresses of Bamborough, Anwick, and Dunstanburgh; and it was to him also that the castle of Bamborough capitulated a second time, in May, 1464, after it had been made over to the Lancastrians by the decision of the governor, Sir Ralph Grey. Finally, it was Warwick by whom the unfortunate Henry was conducted to the Tower, on June, 1465, after his capture at Waddington Hall, about fourteen months after the final defeat of the Lancastrians at Hexham by Warwick's brother, Lord Montague. The Nevils were now in a manner the rulers of king and kingdom. Warwick himself, besides his government of Calais, held the post of chamberlain and the wardenship of the West Marches; his next brother, Lord Montague, was warden of the East Marches, and had obtained the extensive estates of the Percies, with the title of Earl of Northumberland; his youngest brother, George, was lord high chancellor; and his brother-in-law, Bishop of York. But circuits the title of Duke of Clarence, the Princess Margaret, with the duke of Burgundy, brought about in 1468, in opposition to the advice of Warwick; the seduction of the French king Louis XI.; the arts of Lancastrian emissaries; and, according to one account, an attempt made by Edward, in the earl's own house, to violate the chastity of his niece or daughter—were supposed to have been the principal causes that contributed to sever the king from the Nevils; but the story is too complicated, and, in many parts, obscure, to admit of being detailed, or investigated in any way. But at last, in 1470, when Edward died suddenly, the Nevils were once more in possession of York; but Edward's children, if not his nearest relatives, cannot be true. (See his 'Hist. Eng.', v. 190, note, edition of 1837.) The first open intimation of the loss by the Nevils of the royal favour was given in June, 1467, by the king commanding the archbishop of York to deliver up the在外 of the lord chancellor, then and for the future, to the king. Immediately after this there broke out in Yorkshire an insurrection of the peasantry, which, being joined by two near connections of Warwick's, the sons of his sister, Margaret, bride of George 2nd earl of Warwick, and the next year Warwick, who had retired, with a clouded countenance, to his castle of Middleton in Yorkshire, appeared again at court. But the hollow compact did not last long. In July, 1468, Edward's next brother, George, duke of Clarence, was killed in the battle of Wakefield, while the government of the country was actually transferred into an avowed attempt to drive the Wydlewilles from the management of affairs. The royalists were routed with great slaughter at Edgecote, on the 26th of July; and a few days after, Edward was taken prisoner by Warwick and the army of the archbishop of York. He was imprisoned at St. Albans, after his release, and then was conveyed to his castle of Middleton, under the care of the archbishop of York, for two or three months, during which Warwick twice defeated bodies of the Lancastrians who had risen in the north, and, counting upon his support of the crown, was made by the king, while he was held in bondage, a sovereign. But England was not yet at peace; the political events of the time, the operations of the French, and all the other dignities held by the late earl of Pembroke, whom he had been beheaded after the battle of Edgecote. Consequent upon this final defeat of the Lancastrians, the king recovered his liberty; but he was at large again before the end of the year, and apparently with the consent of Warwick. A new rupture, followed by another seeming reconciliation, took place in February, 1470. For in all those movements both parties were professedly aiming to gain time and opportunity to destroy one another. In the beginning of March an insurrection broke out in Lincolnshire, which soon very clearly appeared to have been instigated by Warwick and Clarence; but before they could get the advantage of it the royal army was defeated near York by the son of Lord Wels, the latter were defeated by the king's troops, on the 12th of March, at Erpingham in Rutlandshire. Upon this Warwick and Clarence fled first to the north; whence, pursued by the king, they returned to England. And having now the power of a sovereign, the guns of the batteries were turned upon them by the deputy, a Gascon named Vaucelles, to whom Warwick had entrusted the keeping of the place. On this they made for Harlfort, and were there received with distinguished honors by the admiral of France, and on the 15th of July, Warwick met Henry's queen, Margaret, at Amboise, and there the two solemnly agreed to forget the past, and to unite their interests and efforts for the future, sealing their compact by the marriage of Margaret with Edward, to Warwick's great joy. A force was now raised for the invasion of England; Warwick landed at its head, at Plymouth, on the 13th of September, and immediately proclaimed Henry VI.; Edward, who was in Yorkshire, fled to the town of Lynn, and there taking ship, on the 25th of September, was seen to escape to Alkmaar in Holland. On the 6th Warwick and Clarence entered London in triumph, and taking Henry from the Tower, conducted him with the crown on his head to the parliament, where he was formally restored by parliament to his offices of chancellor and archbishop of England and captain of Calais, with the addition of that of lord high admiral; his brother, the archbishop of York, was again made chancellor; his other brother, now marquis of Montague, for which title he had previously been forced to exchange that of earl of Northumberland, with the estates of the Percies, was restored to the wardenship of the East Marches. But all this lasted only a few months. On the 14th of March, 1471, Edward, secretly
assisted by his brother-in-law, the duke of Burgundy, landed at Ravengar in Yorkshire. First Clarence was won over, and then the archbishop of York. On the 14th April, 1450, at the battle of Barnet, and there the Lancastrians were defeated; and Warwick, their commander, and his brother Montague, slain. Their bodies were afterwards exposed for three days in St. Paul's, and then interred in the abbey of St. John in Berks.

By his first wife, Anne de Beauchamp, who survived him many years, and was after his death reduced to great poverty, till she was restored to her estates by act of parliament after the accession of Henry VII., the earl of Warwick left only the two daughters already mentioned. His eldest, Isabel, who died single, was the natural son of his husband, the duke of Clarence, who was put to death in 1478, a son Edward, who was styled earl of Warwick, and was beheaded on Tower Hill in 1499; and a daughter, Margaret, who was created countess of Salisbury in 1523 and married at the age of seventy, in 1541. By her husband, Sir Reginald Pole, knight, she was the mother of the celebrated Cardinal Pole, and of other three sons and a daughter. Warwick's second daughter, Anne, whose first husband, Edward, prince of Wales, was murdered in 1471, after the battle of Towkesbury, was married the next year to the duke of Gloucester, afterwards Richard III., and died in 1485. By Richard she had one son, Edward, who was born in 1473, and died in 1494. 

The earl of Warwick, or Duke of Northumberland, K.G., was the eldest son of Edmund Dudley, Esq., a grandson of the Lord Dudley, and famous or infamous as the instrument, along with Empson, of the extortions of Henry VII., for his share in which he was beheaded at the same time. His mother was Elizabeth Grey, daughter of Edward Viscount L'Isle (his father's second wife); and he was born in the year 1502. The attainer of Edmund Dudley was reversed the year after his execution; and his widow having in 1529 married Arthur Plantagenet, a natural son of the deceased, her brother, he was brought to court, where he attached himself to the suite of the reigning favourite, Charles Brandon, duke of Suffolk. This same year he received the honour of knighthood for the gallantry he had shown while attending the queen. He now began to have the influence with his successor enjoyed the patronage of Wolsey and Cromwell, the former of whom gave him, in 1535, the office of master of the armony of the Tower, and by the interest of the latter of whom, when Anne of Cleves was brought over, he was appointed master of the horse to the new queen. The fall of Cromwell, in 1540, did not deprive Sir John Dudley of the king's favour; as may sufficiently appear by his being raised in 1542 to the peerage by the title of Viscount L'Isle (which had been enjoyed by his mother), and by his second wife, Susanna, who died soon after being elected a knight of the Garter. In 1543 he was made lord high admiral for life. The same year, having been principally instrumental in the capture of Boulogne, he was appointed to the government of that place as the king's principal; and in 1544 he was created earl of Warwick. He now became ambassador and protector of the Realm. It had been originally intended to make him lord of Coventry; but on the 17th of February, 1547, he was created earl of Warwick, his pretension to which antient dignity consisted in his mother having been the daughter of the first earl of Warwick, and of the right which her father was Margaret Beauchamp, a daughter, by his first wife, of Richard Beauchamp, earl of Warwick, who died in 1439. Before the end of the year also he exchanged his post of high admiral (which was wanted for Somerset's brother), on the 1st, for the viscountship of L'Isle, for that of lord great chamberlain (which Somerset had himself held, and now gave up for his own sake; for he was lord high treasurer and earl marshall, forfeited by the recent attainder of the duke of Norfolk).

Warwick had greatly distinguished himself in the expedition to Scotland in the autumn of 1547, and in the battle of Pinkney, gained over the Scots on the 10th of September; and when he was found marching with an armed force against the Norfolk rebels in the summer of 1549, 'that noble chiefman and valiant earl,' as Holinshed calls him, was thought the fittest person to be entrusted with the command; for such, continues the chronicler, in the opinion of the people, was believed to be the most fit for the high manhood, valiant prowess, and great experience in all warlike enterprises, sufficiently tried and known to rest in him, that either they might be vanquished and overcome by him, or by none other. They were in a great attack, and that force did them such an order as was not engaged at Dussindale on the 10th of August. Soon after this we find Warwick openly disputing the supremacy with the Protector. According to Burnet, his instigator was the ex-chancellor Southampton, who, although no longer taking any share in the government, was, at this time, also exerting all his industry to make a party against Somerset.

The earl of Warwick, observes the historian, 'was the fittest man to work on; him therefore he gained over to his side and, having formed a confidence in him, he showed him all those favours for which the Protector triumphed: he had won the field of Pinkney, near Musselburgh, and had subdued the rebels in Norfolk; and, as he had before defeated the French, so, if he were sent over thither, new triumphs would follow him: he was below the age to be employed; besides, he engaged him to quarrel in everything with the Protector, all whose wavy motions were ascribed to fear or dulness.' The course and issue of the contest between the two rivals are related under the head of the Protector. He esteems his deposition from his office of Protector and sent to the Tower in October of this year; and then there was an apparent reconciliation between the old and the new dictator, during which, in the beginning of June, 1550, Warwick's eldest son, Lord L'Isle, was married to the lady Anne Seymour, Warwick was created duke of Northumberland on the 11th of October, 1551; and Somerset was brought to the block on the 22nd of January, 1552. In the beginning of May following the duke of Northumberland's son, the Lord L'Isle, died, and was married to the Lady Jane Grey, daughter of Frances, Duchess of Suffolk, and great-granddaughter of Henry VII., through her daughter the Princess Mary, who had been married first to Louis XII. of France, and then to Charles Brandon, Duke of Suffolk, and died on the 12th of November, 1553, on the succession by will to Lady Jane Grey (or Dudley). The event was kept concealed for a few days; but at last, on the evening of the 10th, Lady Jane was proclaimed queen. On the 14th, Northumberland left London at the head of 10,000 foot and 2,000 horse, as commander-in-chief of Mary he advanced as far as St. Edmund's-bury, and then returned to Cambridge, where, losing all hope, he proclaimed Queen Mary on the 20th. But the same day he was arrested by the earl of Arundel; the 18th of August he was arraigned of high treason, along with his eldest son, before the lord high steward, in Westminster Hall; both were found guilty, but only the father was executed; he suffered on Tower Hill on Tuesday the 22nd of August. To the general surprise, he professed in his last moments that he died 'in the true Catholic' (meaning the Roman Catholic) faith; and that, notwithstanding his profession of Protestantism, this had been his real religion all his life.

By his wife, Jane, daughter of Sir Edward Sackville, who died in 1555, in his thirty-sixth year, Northumberland had eight sons and five daughters. Of the sons two died before their father, the eldest, Henry, having been killed at the age of nineteen at the siege of Boulogne, the 19th of September, 1543, in the third year of the reign of Edward VI., who was the son and heir apparent, and died without issue in 1558; the day after Warwick, and without issue in 1549. The earl of Warwick was at the siege of Boulogne, the powerful favourite of the next reign; the sixth, George, died, executed, along with his wife, Jane, daughter of Henry, 12th February, 1554, the seventh, Henry, was killed at the siege of St. Quentin. In 1557, the eighth died young. 

Warwickshire is a middle county of England, bounded on the north for a very small space
Derbyshire, on the north-west by Leicestershire, the line of separation being formed in great part by the Roman road, Watling Street; on the east by Northamptonshire, on the south-east by Oxfordshire, on the south and south-west by Gloucestershire, on the west by Worcestershire, and on the north-west by Staffordshire. The form of the county is tolerably compact. The greatest dimension or length is from the junction of the three counties of Warwick, Derby, and Stafford, in the north, to the neighbourhood of Long Compton, in the south, 50 miles; the greatest breadth is from the border of Worcestershire, near Redditch, on the west, to the border of Northamptonshire, near Rugby, on the east, 33 miles. There is a detached portion of the county on the west wholly enclosed by Worcestershire, in the neighbourhood of Bromsgrove; and another detached portion on the south-west entirely surrounded by Worcestershire and Gloucestershire. The boundary of the three counties is very complicated in this part. The area of the county is estimated at 637 square miles. The population at the time of the last census was 511,262. The population in the previous ten years increased: 1821, 274,392; increase, 20 per cent.; 1831, 336,988; increase, 23 per cent.; 1841. 402,121; increase, 18.4 per cent. The population has very nearly doubled in the last four years, it must be remembered, for 1831 is the only year (which we pretend to facilitate comparison with former articles) gives 375 in habitants to a square mile. In area Warwickshire is the twenty-fourth English county; in amount of population (still judging by the census of 1831), the eleventh, being next to Kent, the Metropolis, and Cheshire, and next in density of population, the fourth, being exceeded only by Middlesex, Lancashire, and Surrey. The enumeration of 1841 gives 483 inhabitants to a square mile. The county is situated between 51° 58' and 52° 42' N. lat., and between 1° 50' and 2° 50' W. long. The county town is 83 miles in a direct line north-west of the General Post-Office, London, or 92 miles by the road through Bampton, St. Albans, Dunstable, Stoney Stratford, Towcester, Daventry, and Stamford. The county town of Warwick, 41 miles from Oxford, and 209 miles from London, the nearest large town; by river, the Isis joins the Avon near Warwick, by Hatton, Berkswell, Meriden, and Maxtowe to Whitacre, where it unites with the third range. None of these high grounds are of much elevation, and they are all in the red sand and new red-sandstone districts. A range of hills near the red-sand sand, partly in the district, runs eastward from Warwick, or rather from Leamington Priors, by Dunchurch and Rugby to the border of the county, separating the valleys of the Leam and the Avon.

Warwickshire has no lofty hills, but the whole county is occupied by gentle hills of moderate elevation and in some places of considerable extent. The south-eastern border is skirted by hills composed of the lower formations of the oolitic series, overlooking the valley of the Stour and the Vale of Red Rose, so called from a colossal figure of a horse carved in the ferruginous sands of the slope of Edge Hill, now a part of the scene of that battle in the progress of Charles I.: it is 50 feet high and rises by one of much smaller dimensions. These oolite hills just appear on the border of the county, about Prior's Merton or Marton, between Daventry and Banbury; but the principal portion in Warwickshire consists of two ridges, with the valley between, each being bordered by a small brook which joins the Cherwell near Banbury in Oxfordshire, through which valley the road by Banbury and Gaydon to Warwick runs. The northermmost ridge, comprehending the Burton hills, Grendon Hill, Bitham Hill, Compton (or Edge Hill), Liverton Hill, Mollington Hill, and others, runs from north-west to south-east, dividing the valley just mentioned from a parallel valley drained by another small feeder of the Cherwell, and the valley on which the Ridgeway and the Great Stratford runs near Chipping Nuneaton. There are extensive quarries of gritstone, part of the oolite series, on Compton Hill: the stone is used for troughs and flagstones. The other ridge consists of two parts or branches, meeting at Knowl Hill: one part runs parallel to the Cherwell, and overlooks the valley between them; the other is nearly at right angles to the former, and runs southward, overlooking the valley of the Stour. This latter part of the ridge, known in one part as Edge Hill, possesses considerable interest as overlooking the scene of the battle of Edge Hill in the civil war of Charles I.: it is an elevated platform with a steep escarpment, commanding an extensive prospect over Warwickshire and Worcestershire as far as the Malvern and Abberley hills west of the Severn. The southern prolongation of Edge Hill consists of one county only, but detached, of slaty beds, such as Tyseley Hill, Broom Hill, Mine Hill, and Long Compton Hill. Brailes Hill is detached from the principal chains of hills, and is more advanced into the valley of the Stour: it has two rather lofty summits. The Leominster hills or downs, which form the north-ern extremity of the oolitic range of the Cotswolds, and skirt the valley of the Stour on the western side, are in the detached portion of the county west of Shipston.

The valley of the Stour and the Vale of Red Horse, which skirt the foot of the oolite hills, are occupied by the beds of the lias formation, which overlie the greatest part of the county south-east of a line drawn by Alderminster, Loxley, Wellesbourne Hastings, Monk Mead or Morrell, Upton, Marton, Stratton-on-Dunsmore (on the high road from London to Coventry), and Bearley, near Rugby, Luttrellworth and Coventry, and Willy. The lias forms its north-western limit a range of high ground, including Walton or Bath Hill, Morton Hill, Brampton Hill, Haddrige-upon-field, Dunsmore (or Hill), Heath, Stratton-on-stour, and Long Marston, the red marl and new red-sandstone group crop out, and occupy the valley of the Avon nearly as far as Rugby. The lias forms the cap or summit of several high hills, Red Hill, Burton or Barston Hill, Welcome Hill, Rime Hill, Black Hill, near Stratford, and Alcester, and is used for paving, for stone seats, and as mable for chimney-pieces; it is usually variegated in colour, but presents denticulated appearances.

The rest of the county, with one or two exceptions, is occupied by the formations of the red marl and new red-sandstone group; and forms part of the great midland red-sandstone region, having in the north-east high ground in Fecceham forest, west of Alcester, along which the Ridgeway runs. Another range of high ground forms a semicircle north of Henley-in-Arden, inclosing the vale of the Aire drained by the Aire (a small feeder of the Avon), whilst particularly intensive near Balsall Heath, near Birmingham, and a chain of heads rises near Warwick, by Hatton, Berkswell, Meriden, and Maxtowe to Whitacre, where it unites with the third range. None of these high grounds are of much elevation, and they are all in the red marl and new red-sandstone districts. A range of hills near the red-sand sandstone, partly in the district, runs eastward from Warwick, or rather from Leamington Priors, by Dunchurch and Rugby to the border of the county, separating the valleys of the Leam and the Avon.

In Warwickshire there is a coal formation which extends in line sixteen miles from south-south-east to north north-west from Wicken or Wyken and Sow, two villages close to Coventry on the east, to the border of Staffordshire east of Tamworth; it has an average breadth of two miles. This valley runs in a general north-east, the inclination becoming greater towards the eastern edge of the field, where it is sometimes as great as 45°. The coal district is hilly, and the outcrop of the strata on the east forms a well-defined low escarpment, presenting in some places the coal-measures in an elevated strata of the millstone-grit. At the foot of the escarpment is a level plain, where the lower formations are covered by the red marl and new red-sandstone, which completely hides the coal strata, and the coal-measures are lost in the gravel and sandstone at Griff and Bedworth, in the southern part of the field, between Nuneaton and Coventry. Greenstone is found at Griff, resting to all appearance conformably between beds of shale.

Hydrography and Communications.—The greater part of Warwickshire belongs to the basin of the Severn; a considerable portion in the north is included in the basin of the Trent, and a small portion in the south-east to the basin of the Thames. No part of the course of the Severn drains all the county, except a branch of the River Stour into it by the Avon, one of its most important tributaries. The Avon rises in Northamptonshire, and crossing Watling Street under Dove Bridge, or Dot Bridge, the Tripontium of the Romans, enters Warwickshire about 12 miles from its source, for Dove Bridge. The river flows in a wide channel at Griff and Bedworth, in the southern part of the field, between Nuneaton and Coventry. Greenstone is found at Griff, resting to all appearance conformably between beds of shale.
by Stafford, Hampton Lucy or Bishop's Hampton, Charlecote and Stratford-upon-Avon; and from thence, partly within, partly upon the border of the county, by Wootton-upon-Avon, Burton Bridges, Welford, and Bidford, till it quits the county just above Harvington mill. Its course through the county may be thus estimated:—from Dove Bridge to the bend below Kyton 17 miles; from thence to Warton 14 miles; from Warton to Stratford 13 miles; below Stratford 13 miles: together 57 miles in this county; and if 12 miles be added for its course before entering the county, and 29 for its course after quitting it to its junction with the Severn at Tewkesbury, we have for the whole length of the river, 86 miles. The upper course of the river is winding, but regular; the sweep of it is about 10 miles, and the course 20 miles. The Anker rises in Wolvey Fields, between Wolvey, Withybrook, and Shilton; and flows north-west by Burton Hastings, Nuneaton, Mancester and Witherby, near Atherstone, Grendon, and Polesworth, into the Tame at Tamworth. Its whole course is about 26 miles. At Tamworth, the office line of the river is drawn on the left bank at Nuneaton, and the Sence, from Market Bosworth in Leicestershire, on the right, below Witherby, both very small. Part of the course of the Anker is on the border of Warwickshire and Leicestershire. Near the Tamworth it is navigable.

The small portion of the county which belongs to the basin of the Thames is drained by a small stream which rises near Burton Dassett, and flows south-east by Worthington into the Cherwell, below Banbury in Oxfordshire. The deficiency of river navigation of that county, and of the Avon below Stratford, is compensated by the number and importance of its canals. The Grand Trunk, or Trent and Mersey Canal, and Fazeley and Derbyshire the course of the Thames, running parallel to that river, sometimes on one side, sometimes on the other, and the first act for which was obtained A.D. 1768, may be considered as having given the first impulse to the navigation of the county, the whole of the Trent and the Grand Trunk is within that county. In 1768 the first act was obtained for the Coventry Canal, which commences in the Grand Trunk Canal, on Fradley Heath, near Alrewas, in Staffordshire, and runs southward, nearly parallel to the Trent, nearly a mile; the whole course is about 26 miles, and of that Dig., 17 miles; the remainder of which is navigable.

The Oxford Canal was commenced under an act obtained A.D. 1793, a year after the first act for the Coventry Canal. It commences in that canal at Longford, and has a winding course eastward to Ansty, or Ansty, on the road from Bedworth to Coventry, and then eastward to the Newbold-upon-Avon (where is a short tunnel) and Brownsover to Hill Moreton. From Hill Moreton it runs south to Brantston, where the Grand Junction Canal opens into it; then south-west by Lower Shuckburgh to Napton-on-the-Hill; and then southward, near Wombridge, through a tunnel 1188 yards, or two-thirds of a mile long, into Oxfordshire. It opens into the Thames at Oxford. The whole length of this canal is about 94 miles; of which about half is in Warwickshire or in Northamptonshire. From Newbold-upon-Avon, there are several small parts bound to which it crosses before finally quitting Warwickshire. From its commencement in the Coventry Canal it is level: within a mile of Fazeley a rise of 144 feet by two locks, and then a level of 6½ miles continues to Nuneaton, near Atherstone. Between Grendon and Atherstone (23 miles) is a rise of 514 feet, and from Atherstone the fall to Warwick is 39 feet in 3 miles.

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The Staffordshire and Worcestershire Canal, the first act for which was obtained a.d. 1768, the same year as the Grand Trunk or Trent and Mersey Canal, may be considered as having given occasion to another part of the Warwickshire railways, though the latter county is in that county. In 1788, two years after the act for the Staffordshire and Worcestershire Canal was passed, an act was obtained for making a canal, called the Birmingham Canal, from Birmingham to Bilston in Staffordshire, now known to the Worcestershire and Staffordshire Canal at Atherley near Wolverhampton. In 1783 an act was obtained for making a branch to this Birmingham Canal, and for making another canal from Birmingham to the Coventry Canal at Fazeley near Tamworth; it passed the Birmingham and Staffordshire Canals were incorporated into one company, and by subsequent enactments have been enabled to extend their works. The Birmingham Canal, now called the Old Birmingham Canal, 224 miles long, including its branches, belongs chiefly to Staffordshire; little more than 2 miles being in Warwickshire. The Warwickshire part is on one level. The Birmingham and Fazeley Canal, 15 miles long, belongs almost entirely to Warwickshire, only 2 miles being in Staffordshire. There is a fall between Birmingham and Fazeley of 249 feet. There is a junction between this and the Old Birmingham Canal on the west side of the town of Birmingham.

The Worcester and Birmingham Canal was made under an act passed a.d. 1793; it commences in the Birmingham and Coventry Canal at King's Norton in Worcestershire, and runs south-east and then south into the Avon at Stratford. Of its whole course, 234 miles, by far the greater part belongs to Warwickshire. There are three or four short branches. The canal falls, from the Worcester and Birmingham Canal, to Stratford, 300 feet.

The Warwick and Birmingham Canal, made under an act passed in 1796, commences at Saltisford, on the north-west side of Warwick, and runs north-west by Hatton and Knowle to Birmingham, where it joins a branch of the Birmingham and Stratford Canal. The town of Birmingham. It is 224 miles long, and belongs to Warwickshire, except in one part in the neighbourhood of Birmingham, where it crosses a projecting portion of Warwickshire, a height of 186 feet above the summit level, 10 miles long, and then falls 42 feet to Birmingham. There is a short branch joining this canal with the Stratford-on-Avon Canal.

The Warwick and Napton Canal commences in the Warwick and Birmingham Canal near Warwick, and runs eastward by Leamington Prior, Radford Semele, and Long Itchington to the Oxford Canal at Napton-on-the-Hill. It was made under an act passed a.d. 1794; is about 14 miles long, rising 13 feet from Warwick to Napton, and belongs entirely to Warwickshire.

The Grand Trunk Canal, uniting the Mersey and its port of Liverpool with the Trent and its port of Hull, constitutes the main trunk or artery of this canal system of central England, in which Warwickshire is comprehended. The line of communication between this great line and the Severn, with its port of Bristol; and the Coventry, with the Oxford Canal, connected the system thus formed with the upper part of the Thames at Oxford, and the Grand Junction Canal with the town of Birmingham, is in fact the connecting link that brought the silk and ribbon manufactures of Coventry and its neighbourhood into communication with the four great trading ports of the kingdom; and the Old Birmingham and Staffordshire Canal annexed the iron district of Birmingham with the same ports. The communication with London and with Bristol was however circuitous; but the Worcester and Birmingham Canal gave more direct communication with Bristol; and the Warwick, Birmingham, and Warwick and Napton Canals, with London.

Of the coach-roads, the most important is the parliamentary road to Shrewsbury and Holyhead, which enters the county between Daventry and Dunchurch, and passes over Dunmow Heath and through Ryton, Coventry, Neth- den, and Birmingham. Two other main lines of road to Birmingham: one by Buckingham and Basbury, which enters the county at Shotwell, 4 miles from Banbury, and runs by Gaydon, Warwick, and Solihull to Bir- mingham; and the other by Oxford, which enters the county near Long Compton, and is about 6 miles north of the Ford-on-Avon, and Henley-in-Arden. The distance of Birmingham from the General Post-Office, London, by these three roads, is respectively 110, 118, and 120 miles. A road from London to Liverpool crosses the northern part of the county; and the lines of Birmingham and Burton upon Trent, passing through Atherstone; and the principal road between Bristol and the north of England passes through Birmingham and Sutton Coldfield in the northern part of the county. Roads lead from Warwick by Stratford to Daventry, and by Kidderminster to Coventry, and there are others of less importance.

There are several railways. The London and Birmingham was commenced under an act obtained a.d. 1833; and was opened throughout in September, 1838. It enters the county on the eastern side, not far from Rugby, passes by Rugby, Coventry, and Hampton-in-Arden. Its whole length is 112 miles, about 35 of which are in Warwick- shire. The Grand Junction Railway unites with the Lon- don and Birmingham at Warwick; the line through Wolverhampton, the Potteries, Nantwich, and Warrington to the Manchester and Liverpool Railway at Newton in Lancashire; and with the London and Birmingham, forms part of the great system of railway communication which unites the two principal cities of the kingdom, and between the manufacturing districts of the north of England; but only a small part of it belongs to Warwickshire. The act for it was obtained a.d. 1833, and it was opened throughout in 1837; its length is 624 miles. The Birmingham and Manchester Railway branches from the London and Birmingham line at Rugby, and runs by Leicester and Loughborough to Derby and Nottingham. The act was obtained a.d. 1836, and the railroad was opened a.d. 1840; it is 57 miles long, but only a very few miles of it are an extensive viaduct near Rugby. An act was obtained (a.d. 1837) for a railway between Manchester and Bir- mingham, but greater part of the line has been given up, and it unites with the Grand Junction Railway at Crewe in Cheshire. An act was obtained (a.d. 1840) for a railway from Birmingham to meet the Cheltenham branch of the Great Western Railway; it runs by Broomgrove, and is now completed; the length is 53 miles, but only a small part is in Warwickshire. An act was obtained for a railway from the London and Birmingham line at Coventry, Leamington Priors and Warwick, but we are not aware what progress has been made in it.

Agriculture.—This county, being situated nearly in the centre of England, opened the eastern and western borders to a healthy climate: except in the higher and more exposed situations, where the soil is cold and heavy, the harvest is as early as in more southern counties.

The soil varies extremely, so that two or three different kinds of soil are found in the same place. The chief soil is the loam, which is found to a considerable extent across the centre of the county, and especially between Warwick and Coventry, and from the borders of Worcestershire to Leicesetershire, is mostly of a superior quality; all of it very fit for white meadows, and bearing both beans and turnips. Where the loam inclines to sand, the subsoil is chiefly chesemont, marl, or sand- stone; and under the colder and heavier loams the sub- stratum is clay. There is also a fertile clay on limestone. The best soils, as is generally the case, are not cultivated
with that care and economy which would greatly increase their value. Where the tenant can get an easy livelihood without mean outlay, exertion, or risk, improvements are very slowly adopted. It is from the proprietors chiefly that improvements originate; and unless the tenant has the advantage of a capital tenement, he has little motive to
improving his farm. From various reasons of a political
care, and from old prejudices, there is a general
disinclination in landlords to grant long leases, and yet
nothing tends so much to improve a property. Some proprie-
 tors bring this to a fine, but many infer the danger of
like to see their tenants somewhat dependent on their good
will. The farms used to be of small extent formerly, but
many have been thrown together of late years, and there are now some extensive occupations. A great part of the
land is now considered as common pasture, so that tenants
inclosed, and, as a natural consequence, better farmed;
but many improvements might still be introduced, not
only in the course of cropping, but in the economy of lab-
our, especially in ploughing: few would be disposed to
might be employed in the more general adoption of
the light two-horse ploughs; some of the heavy loans may
require three horses to plough them when the soil is wet and
heavy, but it is absurd to use four horses and only make
the manure of the best. The county of Leicestershire
would better do well with two, at most three. Besides, a very wide furrow is seldom of advantage, whatever a deep one may be.

The course of crops on the best loans used to be:
—
a clean fallow—wheat, beans, oats or barley, and clover—and
the county of Leicestershire particularly, will do well after a
fallow. A better rotation is—fallow, barley, clover, wheat,
beans, oats—manured on the fallow and for the beans;
and if these last be well hoed and the land in good
heart, another crop of wheat may be taken after the beans,
include them as a manure for the following clover, and
they, together with turnips and mangold-wurzel, well manured, take the place of the fallow, and
are followed by barley, clover, wheat.

Lime is used in considerable quantities, and with very
good effect; it improves the quality of the wheat, and in
creases the crop.

On the light loams and sands turnips have been long
cultivated, but till lately not with the care which they de-
serve. They were generally sown broadcast, and thinned out
by hoeing; and the sheep were generally employed on
them as well as they could. This is now done on a much
improved system by some of the best farmers. The land
is better prepared, the turnips sown in drills over the
margins, and the roots are cut by a machine in the field,
and are put into pricks. The roots are cut out with chaff,
and oil-cake or meal: in this way the crop is much
heavier, and the sheep thrive better, while the land is
more richly manured. There is a great extent of excellent
pasture land in the Warwickshire, and although some of the
very best is liable to being infested with rabid land, and farmed on
the convertible system of husbandry, the landlords do not
readily give their tenants leave to break up old sward. It is
only on poor pastures that breaking them up may be advan-
tageous; and although more food is produced by arable land
for the public, the farmer will always prefer that system
which is most profitable to himself, and the landlord that
which ensures the highest and most regular profit. But pasture
land may be badly managed as well as arable, and much of
the same is to be found in Warwickshire; but the
Docks and thistles are allowed to grow and extend; and moles
and ants raise hills which diminish the useful surface; the
dung of the cattle is allowed first to burn the place where
it drops, and then to be carried away by insects.

And advantage of this latter, the custom of continually ploughing from the crown and
gathering the furrows, as it is called, had produced such
high ridges that a man might be hid behind them; and
the water always running down the steep sides of the
ridges, the wheat was springy and lodging. All the best soil was accumulated in the crown,
and there only the plants were vigorous. On a better system
being introduced, great difficulty arose in levelling these
high and always crooked ridges. The most scientific farmers
only avoid the danger of a large ridge of wheat by a
plain of broken stones or tiles barely covered with earth.
By twice gathering five or six furrows on each side of this
plain a little ridge was formed, and in course of time the
large ridge was split in two. As soon as cross-ploughing
could be effected, the whole was brought to a tolerable
level. The drains now were covered with a sufficient depth
of earth; but the old crowns were pared down to
the hard subsoil, and it took much time and patience, with
several fallows, to render them equally fertile with the
rest. In some fields not long levelled, ploughed in
straight and regular ridges, the wave of the crown of
the old ridge could be distinctly traced in the crop by a
deficiency in produce; while the old hollows were the
more luxuriant from the accumulation of fresh soil.

Thorough drainage is in the highest degree essential; but
where the subsoil is clay it will no doubt soon become
universal. The great superiority of the rich loams lying
on sandstone arises in part from being underdrained by
naturally, without which all their natural fertility would have
been lost.

There are not many water-meadows in the county, and
considering the copious springs which rise from the calcare-
ous rocks, and might easily be collected and carried over
the grounds situated at a higher level, it is surprising that
so little use is made of these advantages.

In the neighbourhood of Warwick, Coventry, and es-
pecially Birmingham, much land is laid out in gardens,
at a high rent, and well cultivated: pieces of meadow land,
and pastures, for feeding horses, may be seen near these
manufacturing towns. The mechanics delight in the light
spot of ground, in which they work themselves or employ
labourers, as a relaxation from their counting-houses and
workshops. These gardens are generally highly cultivated.

The growth of wheat, barley, and oats is not confined
to every estate of any extent, besides bedgerow timber, there
are woods and coppices. At one time the forest of Arden
occupied a large portion of the centre of the county. The
Stoneleigh estate, which is one of the finest in the county,
was formerly as extensive as it now is, and may have
been seen some years ago, and probably remain there still;
and also at Ragley, the marquis of Hertford's. The greater
part of the soil of the county is peculiarly adapted to the
growth of oaks. Coppice-wood is of less value in a dis-
trict where cultivations and pasturage are all of the same
class, though it is chiefly converted into hoops, hurdles, and hedges.

There are several thriving young plantations,
which will keep up the character of the county when the
old wood is cut down.

There is no breed of cattle peculiar to the county. The
dairy cows are chiefly long-horns, crossed in every possible
way: short-horns have been introduced, and are preferred
by many, especially for feeding, although the Herefords
are in great repute with the graziers; as well as Scotch,
whose flesh apparently is not so tough.

The old Warwickshire sheep is nearly forgotten, having
been superseded by the New Leicester and a cross of the
two breeds: for folding, the South Downs are preferred.

The following is a description of the field of the county
for the year 18...

At the time of the Domesday Survey the county contained ten hundreds; now there are four. The hundreds of Domesday were—Pexhoke, Hones-
berie, Tremelaw, and Bericestone, now comprised in Kineton hundred; Mereton, Stanley, and Bovelakow, now
comprehend the hundred of Kineton; and in the two latter it is
now comprehended in Barlichway; and Colshill, now
Hemlingford hundred. The position, area, and population in
1831 of the present hundreds, and their respective di-
visions, are as follows:
The borough of Warwick is included in Kineton hundred; Birmingham in Hemingford; and the county in the county of the same.

Warwickshire comprehends the city of Coventry, which, with the district, forms a county of itself [Coventry]; the county-town and municipal and parliamentary borough of Warwick; the municipal and parliamentary borough of Birmingham [Birmingham]; the municipal boroughs of Stratford-upon-Avon [Stratford-upon-Avon] and Sutton Coldfield; and the market-towns of Alcester [Alcester], Atherstone [Atherstone or Atherstone], Coleshill, Henley-in-Arden, Kenilworth, Kington, Leamington Priors, Nuneaton, Rugby, Solihull, and Tamworth.

Warwick, the county-town, is a place of considerable antiquity. It does not appear to have been a Roman town, though Camden and some others have regarded it as such. A charter of Beorhtwulf, king of Mercia, extant in the British Museum (capi. 44, fol. 15b), bears the name of 'Vicus Regalis Werburgewrie,' which is supposed to be Warwick. Warwick was ruined in the early wars of the Danes, and restored by the Lady Ethelfleda, daughter of Alfred the Great, and governor of Mercia, who built a fort on a hill near the town. At the time of the Domesday Survey, there was a borough and contained 261 houses, of which 130 belonged to the king. After the Conquest the town was protected by a ditch and walls, and the castle was much strengthened. Several religious houses were founded. In the time of Philip and Mary, the town received its first regular charter of incorporation, though it had sent members to parliament in the reign of Edward I.

The municipal boundaries comprehend the two parishes of St. Mary and St. Nicholas, the statistics of which in 1831 were as follows:

<table>
<thead>
<tr>
<th>Area in acres</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhabited</td>
<td>Uninhabited</td>
</tr>
<tr>
<td>St. Mary</td>
<td>4560</td>
</tr>
<tr>
<td>St. Nicholas</td>
<td>476</td>
</tr>
<tr>
<td></td>
<td>1715</td>
</tr>
</tbody>
</table>

The municipal boundaries include the town, with a portion of the surrounding country extending from half a mile to above four miles from the town in different directions. The town is on the west side of the Avon, from which it is separated by Warwick Castle and the castle grounds. Its site is a solid rock, in which the cellars are excavated. The streets are irregularly laid out, but are spacious, well-paved, lighted with gas, and in general lined with modern well-built houses. The castle is one of the finest specimens in the kingdom of the antient seclusions of our feudal nobles; it has undergone many improvements, but the outward arrangement and form of the building have sustained little alteration. The approach to the castle is from the eastern part of the town, opposite St. Nicholas's church, by a winding path cut in the rock. One of the towers in the castle, known as Caesar's Tower, is the antient part of the whole building, and is of uncertain date; another, known as Guy's Tower, is of the latter part of the 14th century and of decorated English character, in fine stonework, of noble outline, and of curious construction and composition. The great hall of the castle, a noble room, 62 feet by 37, retains, in its appearance and furniture, much of its antient character. The other apartments contain a number of portraits and other paintings by the old masters, and a valuable and interesting collection of antient and modern armour. The grounds are extensive and beautiful, and one of the greenhouses contains the capacious and beautiful antient vase brought to England by the late Earl of Warwick, to whom it had been given by Sir William Hamilton, and known as the Warwick Vase.' St. Mary's church, built on the site of an old structure in the 14th century, and 'in great part rebuilt after a fire in 1694, which destroyed a large portion of the church, is in the centre of the town. It is a cross church, of which the choir and its windows, especially the choir-screen of Beuchamp Chapel, adjacent to the choir on the north side, are antient; the nave and transept are modern, and are of most barbarous architecture, with an absurd admixture of different styles. The choir has a finely designed arch, but the windows worked from the same stone on each side. 'The chancel,' says Rickman, 'is an uncommonly beautiful specimen of perpendicular work;' and the east front is remarkably fine—simple in its arrangement, but rich from the elegance of its parts. The beautiful Beuchamp Chapel, according to the same writer, 'is completely rich both within and without; its details of the most elegant character and excellent execution, and in very good preservation.' It consists of a chapel of several aisles, and a small aisle, or passage, on each side, between the chapel and the chancel of the church.

In the centre of the castle is a very rich altar-tomb, with the figure of Richard Beuchamp, earl of Warwick, whose executors erected the chapel according to the directions of his will; and there are some tombs of later date. St. Nicholas's Church is modern, neat in the interior, but small and altogether devoid of architectural beauty. There are a spacious and handsome county-hall; a large modern goth, adjoining the county-hall; a county house of the 18th century; and a town hall, or an ancient town-hall of respectable appearance; and a substantial market-house. 'Leicester Hospital' was originally two buildings, the halls of two guilds, founded in the reign of Richard II., one in honour of the Virgin, the other of the true cross, each for twenty-four masters, and an inn. The endowment of this hospital is of considerable value; the master now has, or is to have, a salary of 400l. per annum, and each of the brethren (who have been increased to forty) 80l. a year. The buildings consist of the brethren's lodgings and public kitchen, a quadrangle; a chapel of antient architecture over the west gate of the town; and an antient hall. An antient place of worship, called St. Peter's Church, over the east gate of the town, was used as a free hospital or almshouse. Other schools and almshouses, some dissenting meeting-houses, a neat but small building for the public library, and a theatre. There is a race-course on the west side of the town, where races are held yearly.

Some worsted and cotton piece manufactures are carried on at Warwick, but only 51 men were returned in 1831 as engaged in manufactures. There are malthouses, and lime, timber, and coal wharfs on the bank of the Warwick and Napton Canal. The market, which is well supplied, is attended, and the produce is carried to the market of Stratford on Avon and Coleshill. There are twelve yearly fairs, some of which are considerable cattle-fairs.

Warwick returns two members to parliament; the number of voters in 1835-36 was 1046; in 1839-40 it was 977; and the return for 1844-45 was 1038. There were two county wards, one for Warwick and one for Southam, and the principal place of election and one of the polling-stations for the southern division of the county. The assizes and quarter-sessions for the county are held here. The borough has a commission of the peace, and, under the Municipal Reform Act, is divided into two wards, each having a town council, consisting of 12 aldermen and 18 councillors. Its limits were not altered by the Boundary Act. Quarter-sessions for the borough are held, and there is a Court of Record for personal actions under 100l. but it is of little importance.

The living of St. Mary is a vicarage, of the value of 300l., with a glebe-house; that of St. Nicholas is a vicarage, of the clear yearly value of 216l., with a glebe-house. Both are in the rural deanery of Warwick, and in the archdeaconry of Southam.

There were in the borough, in 1833, twenty day-schools of all sorts, with 714 children, namely, 394 boys and 320 girls; three of these schools were supported partly or wholly by endowments, and contained 89 boys and 36 girls; three others, two of them national schools, were supported chiefly
by charitable contributions, and contained 60 boys and 120 girls. Of the population in the borough about one in thirteen was, in 1853, under daily instruction. There were at the same time ten Sunday-schools, with 865 children, viz. 303 boys and 362 girls; to which may be added one of the many schools which is also a Sunday-school, with 80 girls; making 945 children, or more than one in ten of the population, under instruction on Sunday.

Sutton Coldfield is in the Birmingham division of Hemlingford hundred, 7½ miles N.N.E. of Birmingham and 25 miles from London. The town, which is entered a free borough, enlarged and embellished the church, and introduced the clothing manufacture, building many houses which were to be free for such as followed that business. The parish has an area of 13,000 acres, and contained, in 1831, 757 houses, namely, 736 inhabited, 18 uninhabited, and 3 buildings; with a population of 750 families, or 3664 persons—about half agricultural. The town has a neat appearance, and contains some handsome houses. The church is handsome, and contains a pipe organ, and 27 Insurance society boxes. A grammar school

new in modern: the chancel contains the effigy of Bishop Vesey with his mitre and crozier; he died a.d. 1555, at the age of 103. On the town-hall, a neat brick building, are the arms of the prelate embazoned on a shield, surmounted with a crescent and star, and a noble and stately piece of architecture. The black and cheerless tract of 13,000 acres, extending into Staffordshire, and N.W. and W. of the town is Sutton Park, containing about 3500 acres, granted to the town by the Earl of Stafford, and part of the Lots of the manor, and contained some large pools or pieces of water. Some branches of the hardware manufacture, especially the manufacture of spades, saws, axes, and gun-barrels, are carried on. It has 10,000 daily instruction. The town market is on Monday; and there are two yearly fairs for cattle, sheep, and pedlery.

The corporation of Sutton Coldfield consists of a ward, two capital burgesses, and twenty-two aldermen; the title of the corporation is 'The Wardens and Society of the Royal Town of Sutton Coldfield.' It is not included in the Municipal Reform Act. The warden and the two capital burgesses are magistrates. Quarter-sessions are held, but their criminal jurisdiction has gone into disuse, and often consists of the King's bench, and the Court of Record is also disused. The borough is co-extensive with the parish. The income of the corporation consists of a rent of nearly 750l., and the interest of 1800l. 3 per cent. constable, and other just expenses; besides, the interest on the capital of the Corporation, viz. of the schools and ten almshouses, apprenticing two poor maid yearly, and other purposes chiefly charitable.

The living is a rectory, of the clear yearly value of which there is no return; in the rural deanery of Arden, in the archdeaconry of Coventry, and in the diocese of Worcester. There were, in 1838, ten day-schools, with 450 children, namely, 216 boys and 194 girls, and 40 children of sex not distinguished in the returns. About one in eight of the population was under daily instruction. Of these ten day-schools, six were endowed from the funds of the corporation; and there was, besides, a richly endowed but nearly useless grammar-school; the income of which was nearly 500l. per annum, but the scholars seldom amounted to five. The grammar school was a school of Latin only.

Coleshill is in the Birmingham division of Hemlingford hundred, about 10 miles E. by N. of Birmingham, and 18 miles N.N.W. of Warwick. The parish has an area of 6900 acres, and contained, in 1831, 404 houses, namely, 390 inhabited, 14 uninhabited, and 3 buildings, with 4044 persons, of which 1640 were males, and 2404 females. The church is dedicated to St. Mary. There is a square western tower with battlements, surmounted by a crocketed spire of late perpendicular character, of better design than execution. The church contains a font of Norman architecture, and is rich in monumental structure, especially in a fine entrance of a capital gateway of Norman architecture, in the lower part of an ancient tower surmounted by a spire of more modern date. But...
the most interesting object in the place is the castle, the ruins of which are extensive: they are principally of late perpendicular character, but there are some Norman portions. The most prominent part is an old tower called Caesar's Tower, of which three sides remain, with walls in some parts sixteen feet thick. The large and massive additions of John of Gaunt, known as Lancaster Buildings, are in different stages of decay; and the additions of the 13th to the 15th century, though of comparatively modern date, present, from the friable nature of the stone of which they are built, an appearance of great antiquity. They are called Leicestershire Buildings. They contain the ruins of the noble basement of the castle. The whole area occupied by the castle, and enclosed by the same earl is in better preservation, and is (or was, not long since) occupied as a farm-house. The ruins are in many parts mantled with ivy, which adds to their picturesque character, and are on an elevated, rocky site, commanding an extensive view of the country round.

There are very few remains of the monastery, which was first a priory, and afterwards made an abbey. It belonged to the Regular Canons of St. Augustine. Its possessions were valued at the dissolution at £132, 14s. 9d. gross, or 538l. 19s. (or, according to another statement, 536l. 15s. 4d.) clear yearly income. There is an ancient stone bridge over a brook flowing into the Avon.

The manufacture of horn combs, and of some chemicals, such as saltpetre, and sal-ammoniac, and Glauber's salts, is carried on at Kenilworth. The coal-manufacture, in 1831, employed 150 men. The market is on Wednesday, and there is a yearly cattle-fair. There are some dissenting meeting-houses in the town amongst which is a vicarage, of the clear yearly value of 280l., with a glebe-house, in the rural deanery of Stonely, in the archdeaconry of Coventry, in the diocese of Worcester.

There were in the parish, in 1833, five dame-schools, with 264 scholars, and 26 boys and 237 girls; and two other day-schools of all kinds, with 438 children, namely 201 boys and 237 girls; making one in six of the population of the parish under daily instruction. Of these schools, one was an endowed school with 66 boys, one a school of instruction supported by voluntary contributions, with 30 girls. Three others, with 43 boys and 33 girls, were supported either by endowment or by contribution.

One of the day-schools was also a Sunday-school, and there were two other Sunday-schools, who containing 114 boys and 124 girls, giving 255 children, or 14 per cent of the population, under instruction on Sunday.

Kington, or Kineton, is in the Kington division of the hundred, about 10 and a half miles south-east of east of Warwick. The antiquity of the name is disputed, and the place has no historical interest attached to it. There was formerly a castle situated on a hill west of the town; the ruins are popularly termed King John's Castle, and are said to have been built by King John's father, King John's Well. The area of the parish is 2540 acres, or, including the chapelry of Combrook, 3810 acres; it had, in 1831, 107 houses, namely 96 inhabited and 2 uninhabited; 152 families, and 820 persons. The chapelry of Combrook had at the same time 55 inhabited houses and 7 uninhabited; together 62: with 57 families, and 282 persons.

The population of the whole parish was 1102. The town is irregularly built, the principal street being along one of the roads from Barbury to Warwick; the houses are chiefly old, built of stone and thatched; there are however some detached modern houses. There is an old market-house in the market-place, which is small. The church retains some ancient portions amid many alterations: it is a cross church, with a square tower. The western door has a richly-moulded Norman archway. The market is on Tuesday, but is almost disused. There are two yearly fairs. The living of Kineton is a vicarage united with the chapelry of Combrook, of the clear yearly value of £76, 14s. 6d, in the gift of the Dean and Chapter of Lincoln, or of the Bishop of Lincoln, in the archdeaconry and diocese of Kington, and in the archdeaconry and diocese of Hereford. There were in the whole parish, in 1833, two day and Sunday schools (one of them a national school, and partly supported by voluntary contributions), with 120 children, namely 49 boys and 71 girls on weekdays, giving about one in nine of the population under daily instruction; and with 147 children, namely 68 boys and 79 girls, on Sundays, giving two in fifteen of the population under Sunday instruction.

Leamington Prior is in the Kenilworth division of Knightlow hundred. Its importance is quite of modern date, and is chiefly due to the establishment of Leamington Spa, which was noticed by Camden and Dugdale, but the valuable medicinal qualities of which were brought into notice by Dr. Kerr of Northampton, in 1784, whose recommenda-

tions attracted a few patients, and more prominently by Dr. Lambeth, about the year 1797. The parish has an area of 1720 acres, and contained, in 1831, 1103 houses, namely 1003 inhabited, 139 uninhabited, and 91 building; with a population of 1039 families, or 6599 persons, a very small part of which is agricultural. The town is 90 miles south-west of the General Post-office, and two miles east of Warwick. It is situated in the valley of the Leam, in a situation sheltered by gentle and well-wooded declivities; and consists of two parts, the old town and the new town, separated from each other by the River Leam, gardens, and shrubberies of the Royal Spa, and by the river Leam, which joins the Avon about a mile below the town. Leamington contains a number of new streets regularly laid out, well paved, and lighted with gas, chiefly in the New Town, which lies on the north side of the river, over which is a handsome stone bridge. The old well or spring noticed by Camden has a neat pump-room erected over it. Since 1784 new springs have been discovered, and in connection with these other establishments for making hot waters or baths or bathing, which are the principal, have been formed in different parts of the town. These establishments have hot, cold, vapour, and shower baths, and pump-rooms. There are a number of private and some public rooms, and lodging houses, and private houses, chiefly fronted with Roman cement. There is a handsome building containing a public library and reading-rooms, with an assembly-room above; another assembly-room has card, music, billiard, and refreshment rooms, and an art gallery; a theatre; a public promenade called the Ranelagh Gardens; a botanical garden; a parish church, which retains some old portions amid various mutilations and alterations; a modern episcopal chapel (St. Mary's); a place of worship for Unitarians; a Roman Catholic chapel; a place of worship for Baptists and Methodists; a place of worship for Dissenters; a perpetual curacy of the parishioners of the town; and baths for the poor. A market is held on Wednesday. The Warwick and Nuneaton Canal passes through the Old Town, and enables the inhabitants to obtain coal at a reasonable price from the neighbourhood of Birmingham.

The living is a vicarage, of the clear yearly value of £255: the value of the perpetual curacy of St. Mary's Chapel is not given. The parish is in the rural deanery of Atherstone, in the archdeaconry and diocese of Worcester. There were in the parish, in 1833, four dame-schools with 60 children, namely, 30 boys and 30 girls; a day and Sunday national-school with 134 children, namely, 100 boys and 34 girls; and twenty other day or boarding schools, giving 281 children, making a total of 726 scholars, or two in seventeen of the population under daily instruction. There were at the same time three Sunday-schools with 310 scholars, of sex not stated in the returns, giving one in twenty of the population under instruction on Sunday.

Nuneaton is in the Atherstone division of Hemingford hundred, about eight miles north of Coventry, or 101 north-west of the General Post-office, London. This town is indebted for its early prosperity to a number of the order of Fontevrault, founded here in the reign of Henry II., by Robert Bosse, earl of Leicester; the yearly revenues of the nunnery were valued, at the dissolution, at 290l. 15s. 4d. gross, or 233l. 14s. 6d. clear. It was the site of the old abbey of the very few houses of the order in England. The nuns obtained the grant of a weekly market in the time of Henry III. The hamlet of Ayleborough, about half a mile to the south-east of Nuneaton, in Nuneaton parish, may be regarded as one suburb, and the hamlet of Stockingford, two miles north of the town, another suburb. The small hamlet of Stockingford, in Nuneaton parish, is two miles west of the town. The statistics of the two parishes of Nuneaton and Chiltons Coton, in 1831, were as follows:—

<table>
<thead>
<tr>
<th>Towns</th>
<th>Population</th>
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<tbody>
<tr>
<td>Nuneaton</td>
<td>7756</td>
</tr>
<tr>
<td>Chiltons Coton</td>
<td>2508</td>
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</tbody>
</table>
Only about a fifteenth part of the population of Nun
eaton, and a fifth part of that of Chilvers Coton, were
agricultural.

The town of Nuneaton is irregularly laid out, but
handsomely planted. The river Anker runs through
it. The church, which is enriched by a handsome chancel,
and next to it, is a Gothic building, with a square tower, but
too small for the accommodation of the inhabitants. The chief
branch of industry in the town and neighbourhood is the
raising of sheep. There are about four hundred houses
in the parish of Nuneaton, and 200 in the parish of
Chilvers Coton, besides women and children. The coal-
field, which extends from Tamworth to Coventry, passes
through both parishes, and there are some coal-pits. The
livelihood of Nuneaton is a vicarage united with the chapelry of Stock-
ingford, of the joint clear yearly value of 902L., with a glebe-
house, in the rural deanery of Arden, in the archdeaconry
of Coventry, and in the diocese of Worcester. The
livelihood of Chilvers Coton is a vicarage, of the clear yearly
value of 106L., with a glebe-house, in the same ecclesi-
astical divisions.

There were in Nuneaton parish, in 1833, eighteen day-
schools with 511 children, namely 91 boys and 390 girls,
and 390 children of sex not discriminated in the return. Two
of the schools were endowed: one of them was a grammar-
school founded by King Edward VI., with 49 boys; the
other, a day-school for girls, on the adjacent site, with
36 boys and 300 girls. One in fifteen of the population
was under daily instruction. There were six Sunday-schools,
with 789 children, namely 226 boys and 377 girls, and
125 children of sex not stated, giving about one in ten of the
population in the town and parishes of this portion of
Chilvers Coton there were at the same period one
infant-school, partly supported by an individual contributor,
with 49 children, namely 20 boys and 29 girls; four other
day-schools, two of them national schools, with 233
children, namely 146 boys and 87 girls; and one,
of 308 children, or one in eight of the population
under daily instruction. The two national schools were
also Sunday-schools, and were attended on Sundays by
120 boys and 80 girls; besides which there were five other
Sunday schools, with 24 boys and 118 girls: making a total
of 865 children, or two in seven of the population under instruction on
Sunday. From this unusually large proportion it is probable that
the Sunday-schools are from Atherstone or other adjacent
places.

There are several dissenting meeting-houses in the
two parishes.

Rugby is in the Rugby division of the hundred of
Kinglow, about 83 miles from the General Post-Office,
London, by the south aisle and 85 by the Birmingham
railway, from which Rugby is distant about a
mile. Rugby possesses no historical interest. It had
a castle in the middle ages, of which only the earth-works
remain, containing an area of 2190 acres; and
had, in 1831, 515 houses, namely, 496 inhabited, 7 un-
habitied, and 12 building; with a population of
496 families, or 2501 persons. The town stands on an eminence
near the south bank of the Avon, and consists of several
streets irregularly laid out, containing a number of well built
and handsome houses. The importance of the town is chiefly
derived from its grammar-school, founded a.d. 1567 by Law-
rence Sheriff, a native of Brownsover near Rugby, or perhaps
of Rugby itself, and a shopkeeper (some call him grocer)
of Leominster. In (1537) he had also some employ-
ment in the household of Queen Elizabeth, before her ac-
cession to the throne. The school buildings are in the
southern part of the town; the greater part of them
form a quadrangle laid out, containing a number long by 74
feet, and surrounded on three sides by open cloisters.
The buildings are in the Elizabethan style, of white brick,
with the angles, cornices, and dressings to the openings
and windows, of Attleborough stone. They were erected
early in the seventeenth century, and commanded a house of
spaciousness for the head-master, school-rooms, and a din-
ing-hall, private studies and dormitories for those scholars
who are resident under the care of the head master. There
is also a chapel erected since the foregoing buildings,
containing a monument of Doctor James, formerly
head master, under whom the school first rose to great
eminence. The principal buildings form the south side of
the quadrangle, with an eastward prolongation which in-
cludes the head master's house, and present a handsome
front toward the extensive play-ground of eight acres,
which lies on the south side of the school buildings. Rugby
Cot has a church which possesses little architectural interest. It has a
square western tower without buttresses and devoid of
ornament. There are two ranges of almshouses, one of
them endowed by Sheriff, the founder of the grammar-
school.

Rugby has a weekly market on Saturday, and eleven or
twelve yearly fairs, one of them a great horse-fair.
The Oxford Canal passes near the town. There are places
of worship for Baptists and Wesleyan Methodists.

The living of Rugby is a rectory, of the clear yearly value
of 510L., with a glebe-house, in the rural deanery of Marton,
in the archdeaconry of Coventry, and in the diocese of
Worcester.

There were in the parish, in 1833, six daily schools of all
kinds, with 625 scholars, namely, 455 boys and 160 girls,
giving about one in four of the total population under
daily Instruction. This unusual proportion is mainly
owing to the eminence of the grammar-school noticed
above, which commands curious great churches. The various
parts of the kingdom. The establishment of the school is
estimated to produce 5000L. per annum; a very valuable
part of it consists of eight acres of ground, now covered
with buildings, in or near Lamb's Conduit Street, London,
which were purchased for 100L. from Mr. De Vere, of
Elborow, and another, with 230 acres, was established a.d.
1830, by a gentleman who allowed the master 50L. a year.
There were at the same time two Sunday-schools, with
245 children, namely, 115 boys and 130 girls; giving one in ten
persons in the town, and perhaps some others, a
teaching. The church, which is on the south side of the
village, is a large tapering structure, with a large transept,
and part of the nave, with the lower part of the
tower, which rises from the intersection of the nave
and transept, are of decorated character, of an early date
and remarkable character. The west end of the nave
is a large window, with a fine spire of stone, and
the spire is the belfry-story of the tower. The spire, which is octa-
gonal, is modern. Attached to the chancel on the north
side is a small chapel, now used as a vestry, of similar archi-
etecture to the chancel, having under it a small but
attractive plain groined crypt. The windows of the
transept and nave are very good; the west window of the nave,
though of singular composition, is also good. The
chancel and the vestry have each on the south side a niche for
the vessels of the altar; that in the chancel is richly canopied
that in the vestry plain. The tracery and mouldings in
these parts of the church are very good; the corbels on
the wall of the chancel are very perfect, and deserve attention
for the spirit and beauty of their foliage. The piers of
the nave are plain, but the clerestory has a marvellous
plane screen work in the church. There are a meeting-
house for Independents and a chapel for Roman Catholic.

The market (if kept up) is on Wednesday, and there are
three, or, according to other accounts, five yearly fairs for
cattle, horses, cheese, or other articles.

The living is a rectory, of the clear yearly value of 1455L.,
in the rural deanery of Arden, in the archdeaconry
of Coventry, and in the diocese of Worcester. There is in the
village a chapel erected in 1455, to St. James, the curacy of
which is of 40L. clear yearly value.

There were in the parish, in 1833, thirteen day-schools of
all kinds, with 279 children, namely, 117 boys and 42
girls, and 120 children of sex not distinguished in the
returns; giving one in ten of the population under
daily instruction. There were at the same time four Sun-
day-schools, with 270 children, namely, 127 boys and 143
girls; giving about one in eleven of the population under
instruction on Sundays.

Southam is in the Southern division of Knightlow hundred,
13 miles north-east of the General Post-Office, Lon-
don, through Daventry, 9 miles cast by south of Warwick and
12 south-east of Coventry. The parish has an area of
2770 acres; and contained, in 1831, 289 houses, namely,
226 inhabited and 9 uninhabited, with a population of 286
souls: of which, 236 were males, and 50 females. About
one-third of the population was agricultural. The town lies
in a valley, watered by a small stream which flows into the Ithen, or Iечен, just be-
low the town. It contains a number of modern well-built
houses, and a number of various kinds of manufactures.
It is decorated with some good windows; other parts are
of perpendicular character, some parts very
good, others inferior. It has a western tower and spire.
Some of the tracery has been much mutilated. There
are a number of worship for Baptists, a free school, a self-sup-
porting dispensary, and an infirmary for diseases of the
eye and ear. The last is an ornamental building of per-
pendicular character. The market is on Monday, and is a
good corn-market; there are several yearly fairs for sheep,
horned cattle, and horses. There are two mineral-springs
near the town.

The living is a rectory, of the clear yearly value of 534£,
with a glebe-house, in the rural deanery of Marton, in the
archdeaconry of Coventry, and in the diocease of Worcester.
The population, in 1831, was 289, and in
the national schools, chiefly supported by endowment or con-
tributions, with 97 children, namely, 67 boys and 30 girls;
giving about one in thirteen of the population under daily
instruction. There were 17 average day-schools, and
were attended on Sunday by 101 children, viz. 73 boys and
28 girls, or one in twelve of the population.

A few of the villages claim a brief notice. Bedworth
is in the Kirby division of Knightlow hundred, about 3
miles south of Bidford. The church of the parish has an area
of 920 acres: the population, in 1831, was 3980, a very small part
of which was agricultural. There are coal-pits and stone-
 quarries near the village, which, in 1831, gave employment
to 180 men: more than 300 men were at that time engaged in
the employment of the quarries. The village is remarkable
for its beauty; it is situated on a rise, and is in
the same level as the population returns. The village is on the road between Nuneaton and Coventry, which are the chief seats of the ribbon-manufactory.

Birford is in the Stratford division of Barlichew hundred,
on the northern bank of the Avon, over which there is
a bridge 6 miles lower down than Stratford, on the line of the
Icknield Way. The parish has an area of 3240 acres,
with a population, in 1831, of 1293; above half agricultur-
al.

Brails is in the Brails division of Kington hundred, in the
south eastern part of the county, 10 miles from Banbury,
the road to Shipston-upon-Stour. The area of the parish is
3220 acres: the population, in 1831, was 1272; much of
the land is of an agricultural character. The
furniture of plough for livings. Brails had, in 1833, an infant-
school with 40 children; an endowed day-school with 104
boys and 10 girls; two national Sunday-schools; and
a small day and Sunday school, taught gratuitously by the
Roman Catholic priest; besides private schools. The
church is large, and has a lofty tower: some parts are
of early English, others of decorated English, others of per-
pendicular character. In the churchyard there is an
antique tomb with a effigy.

Bolton in the Kirby division of Knightlow hundred,
about 4 miles south-east of Nuneaton. The parish has an area
of 4000 acres: the population, in 1831, was 1782; nearly half agricultural. The village of Bolton
is about a mile from the church, which has been enlarged
in the last few years, is close to the village on the north-
side. In 1831, 166 men in the parish were engaged
in manufactures, chiefly or wholly in that of ribbons.

Dunkirk is in the Rugby division of Knightlow hundred,
about 6 miles south-east of Chippenham. The parish has
an area of 5010 acres, and comprehends the hamlets of Toft
and Thoristowe: the population, in 1831, was 1029; about
half agricultural. Dunchurch village is on the south-
eastern brow of the high waste land of Dunsmore Heath.
The parish comprehends the parish on the north.

The church is in a considerable
manding situation, and is a handsome and curious building.

The chancel is early English, with some good decorated
windows inserted, particularly the east window: this
chancel has the low side window. The nave is decorated,
with good piers and arches, and some good windows: the
doors of the aisles have remarkably rich mouldings. The
tower is perpendicular, with considerable enrichments
and mutilations. There are two ancient water-drains, and the
antient font is in the tower: it was plain and circular, with
a cabled moulding round the upper edge. There are
some small portions of an old wall, or workings, in the church
(Rickman). There is a substantial brick school-house for
the free grammar-school, which contained, in 1833, between
60 and 70 boys; and near the school-house is a range of
almshouses.

Dunsmore is in the county of the city of Coventry, about
4 miles north of that city. The area of the parish is 1750
acres: the population, in 1831, was 810; about one-third
or one-fourth agricultural: the ribbon-manufacture gave
employment at that time to above 50 men.

Poleshill is also in the county of the city of Coventry, about
2 miles north-east of Coventry. The area of the parish is 2910 acres: the population, in 1831, was 6968; a
very small part agricultural. This parish is one of the
principal seats of the ribbon-manufacture, which employed,
in 1831, 800 men in the manufacture. Poleshill has an Independent place of worship, and an endowed
free-school or schools. There are coal-works and a stone-
quarry near the village.

Sow is in the county of the city of Coventry, about 3 or
4 miles east of Chippenham. The area of the parish is 1090 acres: the population, in 1831, was 1414. The ribbon-manufacture gave employment to 100 men in
this parish, and to above 50 in the neighbouring parish of
Shipston (the area of which was 880 acres); and the popu-
lation, in 1831, 460, in the Kirby division of Knightlow
hundred. There are considerable coal-works in Sow parish:
the Oxford Canal passes through the midst of them.

Spoke is also in the county of the city of Coventry, about
3 miles south-east of Coventry. The area of the parish is
950 acres: the population, in 1831, was 848. The ribbon
or other manufactures employed about 53 men in 1831.

Stoneleigh is in the Kenilworth division of Knightlow hundred, on the road to Bromsgrove, which joins its junction with the Avon, about 2 miles east of Kenilworth, and 18 miles west of Warwick. There was anintently a Cistercian abbey here, transferred hither from Radmore in Staffordshire about 
A.D. 1154, the yearly revenues of which at the dissolution
were estimated at 1728. 2d. 5d. gross, or 1512. 0s. 4d. clear.
The gateway of the abbey is still standing in Stone-
leigh Park, the seat of Lord Leigh. The church of Stone-
leigh is a large irregular building, partly of Norman archi-
tecture, partly of later date. Among the monuments is
that of Miss Eager, daughter of Lord Chancellor Egbert,
wife of Robert Dudley, earl of Leicester, the favourite of
Queen Elizabeth, but could not establish her claim. The
area of Stoneleigh parish is 8030 acres: the population,
in 1831, was 1298; three-fourths agricultural. There are
two free schools, one for boys and 75 girls, in the week, and 106 scholars, 51 boys
and 57 girls, on Sundays.

Studley is in the Alcester division of Barlichew hundred,
about 4 miles north of Alcester. The parish has
an area of 5070 acres, and comprehends the hamlets
of Austin's and Thurstaston: the population, in 1831, was 1003; about one-third agricultur-
al. A considerable manufacture of needles and fishing
books is carried on in the parish, which gave employment, in 1831, to above 100 men, beside women and children. Wolfe, nearly 6 miles south-east of Nuneaton, had, in 1831, 46 persons engaged in manufactures, apparently of ribbons. The area of the parish is 3790 acres: the population, in 1831, was 995; two-fifths agricultural.

**Divisions for Ecclesiastical, Legal, and Parliamentary Purposes.**—This county is at present wholly included in the archdeaconry of Coventry. It comprehends the whole archdeaconry of Coventry and a part of the archdeaconry of Worcestershire. The rural deaneries and ecclesiastical curates are as follows:—

**I. Archdeaconry of Coventry.**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Arden</td>
<td>20</td>
<td>18</td>
<td>21</td>
<td>9</td>
<td>9</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Coventry</td>
<td>8</td>
<td>14</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Marton</td>
<td>10</td>
<td>14</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Stonely</td>
<td>0</td>
<td>18</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>31</td>
<td>16</td>
<td>9</td>
<td>6</td>
<td>101</td>
<td></td>
</tr>
</tbody>
</table>

**II. Part of the Archdeaconry of Worcester.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blockley (pt. of)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Droitwich (pt. of)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Warwick</td>
<td>18</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

**Add Archdeaconry of Coventry above**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
<td>64</td>
<td>31</td>
<td>16</td>
<td>6</td>
<td>161</td>
<td></td>
</tr>
</tbody>
</table>

**Total of the county**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>78</td>
<td>96</td>
<td>38</td>
<td>23</td>
<td>8</td>
<td>241</td>
<td></td>
</tr>
</tbody>
</table>

The archdeaconry of Coventry was formerly included in the diocese of Lichfield and Coventry; but, in pursuance of the recommendation of the church commission, has been separated from that diocese, and added to the diocese of Worcester, in which the whole county is now included. The archdeaconry of Coventry includes the greater part of the county, and especially the rich and populous manufacturing districts of the north and north-east. The archdeaconry of Worcestershire comprehends the southern and south-western parts, which are agricultural, together with the adjoining part of Worcestershire.

The county is included in the midland circuit; the assizes and quarter-sessions for the county are held at Warwick; those for the city of the county of Coventry at Coventry. There are a county gaol and county house of correction at Warwick; a gaol and house of correction at Coventry for the county of that city; lock-up houses at Leamington and Birmingham; a debtors' or Court of Requests' prison at Birmingham; and a county asylum for disqualified juvenile prisoners at Stratford.

The county gaol at Warwick is well ventilated and dry, and moderately clean; but so much crowded as to make it difficult to maintain effective discipline: the townspeople give more trouble than prisoners from the county parts; but the most troublesome are the debtors.

The county house of correction at Warwick has not a sufficient number of cells for the proper separation of the prisoners; but the management is such as to reflect the highest credit on the keeper and staff. The system of labour in the cells formed by the inspectors of prisons is deserving of imitation. Nearly half the prisoners are from Birmingham. The chaplain to the gaol and house of correction is a zealous and efficient officer, and some interesting cases of reformed prisoners are given by him in the Fourth Report of the Inspectors of Prisons. The gaol and house of correction at Coventry is not large enough, but the number of cells is sufficient for the usual number of inmates: it is secure, dry, and moderately well ventilated; and the management of the prisoners and weavers and agricultural labourers is good; some of them are strangers not resident in the county of the city of Coventry.

The two lock-up houses at Leamington are small and insufficient; one is under the town-hall, the other at the police station, in a distant part of the town; that at the town-hall, which is most used, has not a sufficient number of cells. It is used only for the temporary confinement or prisoners. The principal lock-up house at Birmingham (there are three lock-up-houses) is attached to the police office. The time of confinement is usually short, and there is little attempt at discipline; there is no chaplain, and no instruction of any kind is provided. The debtors' prison at Birmingham is exclusively for debtors from the Court of Requests; it is neglected and dirty.

The county asylum at Stratton was established in 1817, at the suggestion of Judge Dallas, for the reception and reformation of juvenile offenders at the expiration of their imprisonment. The house, now in a retired situation, is in the hands of a keeper and his wife, the only resident officers. The age of admission is from 14 to 16; but some boys under 14 had been received and transmitted to 'the Children's Friend Society' during the interval. The boys are taught to read and write and the elements of arithmetic, and are employed in making clothes and shoes, and in working in a large garden, in which they commonly take great delight.

There is an ample supply of books, religious and miscellaneous, and books, and have and become respectable workmen. Some have come afterwards, and expressed their gratitude for the benefits derived from their residence here. The institution is supported by voluntary contributions, and by the sale of articles made in the house.

Before the Reform Act, Warwickshire sent only six members to the House of Commons, namely, two for the county, two for the city of Coventry, and two for the borough of Warwick. By the Reform Act the number was increased to five. The county is divided into two parts; two each for Warwick and Coventry as before; and two for Birmingham, which was made a parliamentary borough. The Boundary Act the northern division of the county was determined to comprehend the hundred of Hemlingford, and the county of the city of Coventry, and the Rugby and Kirby divisions of Knightlow hundred: the principal place of election is Coleshill; and the polling places are Coleshill, Nuneaton, Coventry, Birmingham, and Dunchurch. The southern division of the county comprehends the hundreds of Barlichway and Kington, and the Kenilworth and Southam divisions of Knightlow hundred: the principal place of election is Warwick; and the polling places are Warwick, Kington or Kington Stratford-on-Avon, the Hey-in-Arden, and the city of Warwick. The county of Warwick, which is less extensive than that of the county of the city, and those of the borough of Warwick, were not altered by the Boundary Act. The parliamentary borough of Birmingham comprehends the parishes of Birmingham and Edgbaston, and the towns of Bordesley, Dudley, Dostington and Duddleston with Nechells, and Deritend, in the parish of Aston. The population of the parishes and townships included in the borough was, in 1851, 142,251. Birmingham has since been incorporated as a city, by charter dated 6th Oct., 1838. The municipal borough has the same limits as the parliamentary. The constitutional constituency of the county and the city and boroughs in it, in 1835-6, and 1838-40, was as follows:

**County Constituency 1835-6 1838-40**

<table>
<thead>
<tr>
<th>City and Borough</th>
<th>Constituency</th>
<th>1835-6</th>
<th>1838-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern division</td>
<td>6506</td>
<td>6766</td>
<td>3681</td>
</tr>
<tr>
<td>Southern division</td>
<td>3997</td>
<td>4233</td>
<td>1046</td>
</tr>
<tr>
<td>Birmingham</td>
<td>4947</td>
<td>6419</td>
<td></td>
</tr>
</tbody>
</table>

| Total | 10,502 | 11,039 |

**History and Antiquities.**—In the earliest historic period this county appears to have been or near the border of the three nations, the Cornubii (Kopeuros, Ptolemy; or in one MS. Kopeuros), the north-west; the north (Kepareus, Ptolemy), on the north-east; and the Dobunii (dotsuros, Ptolemy), on the south; but to which of these nations it belonged, whether to one or more, and in what
proportion, there are no means of determining. Camden assigns it to the Cornovii; Mr. Britton, in the 'Beauties of England and Wales,' to the Cornovii and the Wiganites, whom he identifies with the Jugantes or Jugantes, a people named only in one passage of Tacitus. *Annals, lib. xii.* 'Citius Jugantium,' of which the reading is disputed.

In the Roman division of Britain, Warwickshire appears to have been included in the province of Flavia Caesariensis.

Several Roman or other ancient roads cross the county or pass along its borders. The ancient Watling Street in its north-westward progress meets the border of the county on the east side near Hill Moreton, and runs along the north-eastern side of a manor of Middlemore, which, as its course, still north-westward, is wholly within the county to the passage of the Tame, between Whiteclere and Fazeley, where it enters staffordshire. While on the border it separates Warwickshire partly from Northamptonshire, but chiefly from leicestershire. The Fosse Way, another ancient road, enters the county on the south, and crossing first the detached portion of the county at Stronth-on-the-Fosse, and then the intervening portion of Worcsshire, enters the main part of the county at Holford-on-the-Stour, and runs down the county as far as Dunmore, Brinklow, and Wrotton-under-Fosse, to High Cross, where it intersects Watling Street and enters Leicestershire. Another road, designated in the Ordnance map the Roman road, enters the county at Baddesley Clinton, and runs north by west by Bagbury, Brinklow, and Dunmore, and intersects Watling Street and enters leicestershire. It diverges to the north-west, and in the map of Antient Britain is published by the Society for the Diffusion of Useful Knowledge, more correctly the 'Ryknield Way,' enters the county on the south-west side, and runs north by west by Bidford, Alcester, Studley, and Ipsey, into Worcsshire. It angles to the south-east, and after intersecting the Fosse near Alcester and Studley it is called 'The High Way.'

Some Roman towns and stations, in the county or on the border, may be identified. The Triportionum of Antoninus is fixed by Dugdale and Gale at Dove bridge, or Dove ford, on Watling Street, at the junction of the two counties of Worcs and Leicestershire, and Warwick, of Leicestershire, and Staffordshire. Roman coins turn up in the county or touches this border near Birmingham and near Sutton Coldfield; after which it enters staffordshire and intersects Watling Street at Exeterum, now Wall, near leicestershire. Between Alcester and Studley it is called 'The High Way.'

Some Roman towns and stations, in the county or on the border, may be identified. The Triportionum of Antoninus is fixed by Dugdale and Gale at Dove bridge, or Dove ford, on Watling Street, at the junction of the two counties of Worcs and Leicestershire, and Warwick, of Leicestershire, and Staffordshire. Roman coins turn up in the county or touches this border near Birmingham and near Sutton Coldfield; after which it enters staffordshire and intersects Watling Street at Exeterum, now Wall, near leicestershire. Between Alcester and Studley it is called 'The High Way.'

The Venues of the same writer is fixed by Camden, Stukeley, and others, at or near High Cross, where the Walling Street and the Fosse Road intersect. Camden has preserved a local tradition of an ancient most flourishing city, named Clecester, which had a senate of its own, and of which Cleybrook, about a mile off, was a part, and speaks of foundations of hewn stone built of bricks, into which the brooks were fitted; and the name Clecester is by the plough. The Mundaesium of the same writer is fixed at Maneceter or Manchester, near Atherstone. Here are evident remains of a Roman station; the ditch and valium being very perfect. Alcester may be identified with the Aulern of the 14th letter of Richard of Cireneester. Roman coins and medals of brass, gold, and silver, and antient bricks, have been found at Alcester. Probably the name may have belonged also to the river (Ampne) on which the town stands. It may be observed that Richard assigns this town to the Dobuni. Near Chester-ton, on the Fosse Way, is an encampment, evidently Roan, which is identified by Mr. Hatchard, the translator of Richard of Cireneester, with a station, the name of which is lost of Richard.

Roman coins or other antiquities have been found near Birmingham, Hampton-in-Arden, Willoughby near the Leam, on the eastern border of the county, and at Warwick; and a Roman pavement at Coventry. Mr. Reynolds mentions in his *Romish Remains* a Roman station at Holy Kirby, near Lutterworth and Coventry; but it is not marked in the Ordnance map. There are some earthworks at Brinklow, near Monk's Kirby, on the line of the Fosse, which Dugdale conjectured to be Roman.

In the earlier Saxon period Warwickshire formed part of the kingdom of Mercia. The southern part of the county, which has been all along included in the diocese of Worcester, appears to have been included in the subordinate kingdom of the Wiganites or Wiganites, as, in the *Bibliotheca Topographica Britanni," (1753. p. 123) 'provincia Hulceorum,' which was in existence as early as the middle or latter end of the seventh century. Notices of this subordinate principality or province continue down to the year 826. The treacherous death of the Mercian king Ethelbad, a.d. 807, is placed by the Saxon chronicle at Seccandune, apparently Seckington in Warwickshire, near Tamworth. Under King Alfred, Warwickshire came, with the rest of Mercia, to the west of Walling Street, into direct subjection to the West Saxon crown (about a.d. 868), and during part of the reign of Alfred and his son Edward the Elder was governed by the alderman Anbertheaer, and later by the lady Althouseaer or Ethelbeata, Alfred's daughter. During this and the subsequent reigns it was the scene of the war with the Danes or Northmen.

To this period of history, namely, a.d. 868, the third year of the reign of Athelstan, or the 6th of Edward, some of our early chroniclers assign the existence of the fabulous Guy, Earl of Warwick. According to the legend, Athelstan was at war with the Danes, who had penetrated to the neighbourhood of Winchester; and the Earl, depending on the course of the river Avon, has received by an English champion to be appointed, and Colbrand, who, though acting as champion of the Danes, is described as being an African, or Saracen, of gigantic size, whether the crown of England should be granted to Athelstan, or to Colbrand, point to a period subsequent to the Norman conquest, as in that in which the legend received its present form. Dr. Pegge has examined into the origin of the legend, in a paper contained in the fourth volume of the *Bibliotheca Topographica Britannica,* and has shown that no such legend existed before a.d. 1370, and that it was only in the time of the first Earl of Warwick, or the year 926, that the name of 'Uraswada, vicar of Warwick's, and Sheriff of Warwick's, it is probable that there were earls of Coventry, or perhaps Chester and Coventry, and one of these, i.e., the one who had acquired the government of Mercia, is connected another celebrated legend, that of the fair Godiva, his wife, who is said to have ridden naked through the city of Coventry. (Coven-

The legend is also sufficiently given by Leofric and Godiva are historical, not fabulous persons, and belong to the reign of Canute; and an ancient inscription accompanying a picture of the man, on a window of Trinity Church, Cambridge, is the only one that can be taken as evidence that the city owed some immunities to the lady's intercession. The inscription was—

*"I lenche, for the love of thur, Doe make Covento tolere*."

Warwickshire was ravaged by the Danes under Canute in the last year of the reign of Ethelred II., a.d. 1015.

In the civil war of Stephen and the empress Maud, Coventry, which was held by Bade, as well as Warwick, one of the supporters of the empress, was taken by the king's troops; and the attempt of the earl to retake it brought on
WAR

an engagement, in which the king was hurt, and the earl wounded and repulsed. This incident is given by Mr. Britton, in 'The Beauties of England and Wales'; but we cannot trace his authority, or fix the year of its occurrence. In the civil troubles of Henry III., after the defeat and death of Simon de Montfort, the castle of Kenilworth held out for the insurgents for seven months (a.d. 1266); and in the troubles of the reign of Edward II. the murder of Gaveston, the king's minion, took place at Blacklow Hill, near Warwick. He was taken from the castle of Warwick, now known as the Beacon, by the earl of Beauchamp, earl of Warwick (whom Gaveston had insultingly called 'the black dog of Arden'), and was beheaded by his order. The incident is commemorated by an ancient inscription in the rock near the summit of the hill:

P. GAVESTON, EARL OF CORNWALL, BEHEADED HERE.

1311.

In the war of the Roses the inhabitants of the county were divided between the two parties: the Warwick men, swayed by their earl, the celebrated 'king-maker,' were Yorkists; the men of Coventry, won by the frequent visits and favours of Henry VI. and his queen, Margaret of Anjou, were supporters of the house of Lancaster.

In the civil war of Charles I. the county generally embraced the cause of parliament, being especially influenced by the influence of Lord Broke. The first great battle of the war was fought at Edge Hill, in the southern part of the county (a.d. 1642). The king was near Banbury in Oxfordshire, where was a Parliamentary garrison, which he had ordered to be suppressed. His orders were carried out by an enthusiast, Sir John Lisle, and the town of Kineton, and the Royalists descended the hill to attack them. The battle was severe, but indecisive: the loss on both sides is commonly stated at 9,000; but the slain were probably near 10,000; the wounded may be made up the larger number. The Parliamentaryists retreated the next day to Warwick; while the king returned to Banbury, which he forced to surrender. The numbers engaged were stated in an account sent by some Parliamentary officers to the speaker of the House of Commons, and ordered by the house to be printed, at 10,000 on their own side, and from 14,000 to 22,000 (viz. 19,000 foot and 4000 horse) on that of the king. The king had marched through the county before the battle; and after his leaving Banbury, the townsmen acted his part and maintained the point, and conveyed it to Warwick Castle. They further showed their hostility by refusing to manufacture swords for the Royalists, while they readily supplied the opposite party. They were also known for their loyalty, and were known to的趋势 Prince Rupert, whom the king had ordered to open the communication between Oxford and York. The town was however taken by the prince early in April, 1643. A minister who acted as governor was killed, and part of the town burned. Warwick Castle, the principal post of the Parliamentarians, was attacked by the Royalists in the early part of the war, but without success.

The only incidents requiring notice in later times are the Birmingham riots. The first of these occurred in 1715, when several dissenting meeting-houses were destroyed or injured. The next occurred in 1719, when two dissenting meeting-houses and the dwellings of several dissenters, including that of Dr. Priestley, minister of 'the New Meeting' (one of those destroyed), were burned, and the doctor was obliged to fly for his life. The last great riot was connected with the Chartist agitation, and occurred in July, 1839, when several houses were destroyed. The population of the hundreds of 1715 were partly or wholly the result of religious bigotry; those of 1719 were partly or wholly the result of political; those of 1839 were political. The formation of the Great Western Union during the agitation of the Reform Bill, in 1831, led to some meetings of immense numbers of people, but was not attended by any breach of the peace.


STATISTICAL.

Population and Occupations.—As a manufacturing county, Warwickshire is the eighth in rank, a position which it maintained in 1811-21-31, standing in the last year between Northumberland and Staffordshire: the proportion of the manufacturing population was sixty per cent. In 1831, at which period there were 293848 workers employed, 114242 occupiers not employing labourers, and the number of agricultural labourers was 15,641. The remainder of the male population aged 20 and upwards was distributed in trade (including 11,575 employed in manufactures), 32,579 in retail trade, 32,401 as capitalists, bankers, and members of the professions; 10,268 non-agricultural labourers; 2446 domestic servants; other males aged 20 and upwards, 3729; and there were 13,089 female servants. The following details are from the Returns of 1831:—About 4500 men engaged in making ribbons, nearly one-half of them in the city of Coventry, upwards of 300 at Nuneaton, 900 at Foleshill, 300 at Acocks Green, 1200 at Dilston, 100 at Bow, 110 at Streetly, 100 at Scrivelsby, 100 at Chilton, 100 at Nuneaton, 100 at Swynnerton, 100 at Castle Hedingham, 100 at Southam, 100 at Walsall, and in many other places; and about 100 men are employed in weaving linen in various parts of the county. Watch-making has been successfully introduced at Coventry. Needles are made by 350 men, chiefly at Lapley, Studley, Alcester, and Sambourne; and at Kenilworth the manufacture of combs employs upwards of 160 men. But these and the smaller manufacturers of agricultural machines, rush-weavers, and others, are nothing in comparison with the activity displayed at Birmingham and Coventry.

The population of the county at the following decennial periods when the census was taken was as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Increase per Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>96,942</td>
<td>102,282</td>
<td>209,224</td>
<td>1839</td>
</tr>
<tr>
<td>1811</td>
<td>103,369</td>
<td>111,186</td>
<td>214,555</td>
<td>5.8</td>
</tr>
<tr>
<td>1821</td>
<td>131,583</td>
<td>140,502</td>
<td>272,085</td>
<td>21.7</td>
</tr>
<tr>
<td>1831</td>
<td>135,076</td>
<td>171,034</td>
<td>306,110</td>
<td>22.8</td>
</tr>
<tr>
<td>1841</td>
<td>135,679</td>
<td>206,036</td>
<td>441,715</td>
<td>19.4</td>
</tr>
</tbody>
</table>

It is estimated that in 1700 the population was 96,000: from 1801 to 1841 it increased 193,625, or 33 per cent. According to the last census the number of persons to a square mile is 464. The population, &c. of each hundred and borough in 1841 is shown in the following table, communicated by the commissioners of the Census, the returns not having yet been published:
In 1831 the number of inhabited houses was 68,233, inhabited by 72,357 families, and there were 702 houses building and 5982 uninhabited.

The expenditure for the year ending March 31, 1831, 1831-2, was as follows:—

<table>
<thead>
<tr>
<th>Name of Union</th>
<th>Inhabitants</th>
<th>Maintenance</th>
<th>Relief</th>
<th>Salaries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcester</td>
<td>15,823</td>
<td>404</td>
<td>290</td>
<td>354</td>
<td>4,858</td>
</tr>
<tr>
<td>Aston</td>
<td>28,003</td>
<td>968</td>
<td>163</td>
<td>1,143</td>
<td>5,891</td>
</tr>
<tr>
<td>Atherstone</td>
<td>1,701</td>
<td>596</td>
<td>590</td>
<td>1,186</td>
<td>3,616</td>
</tr>
<tr>
<td>Foleshill</td>
<td>11,948</td>
<td>564</td>
<td>144</td>
<td>709</td>
<td>2,678</td>
</tr>
<tr>
<td>Meriden</td>
<td>21,722</td>
<td>148</td>
<td>668</td>
<td>814</td>
<td>8,168</td>
</tr>
<tr>
<td>Nuneaton</td>
<td>13,508</td>
<td>1077</td>
<td>171</td>
<td>1,351</td>
<td>5,725</td>
</tr>
<tr>
<td>Rugby</td>
<td>1,023</td>
<td>366</td>
<td>107</td>
<td>470</td>
<td>2,070</td>
</tr>
<tr>
<td>Solihull</td>
<td>11,233</td>
<td>608</td>
<td>197</td>
<td>815</td>
<td>3,013</td>
</tr>
<tr>
<td>Southam</td>
<td>8,720</td>
<td>449</td>
<td>129</td>
<td>598</td>
<td>2,916</td>
</tr>
<tr>
<td>Stratford</td>
<td>1,315</td>
<td>743</td>
<td>181</td>
<td>924</td>
<td>3,711</td>
</tr>
<tr>
<td>Warwick</td>
<td>12,374</td>
<td>999</td>
<td>683</td>
<td>2,099</td>
<td>10,186</td>
</tr>
</tbody>
</table>

The number of persons relieved in these unions during the quarter ending Lady-day, 1840, was 18,251 (1726 indoor, and 11,025 out-door), or 8 per cent. of the union population. There were 391 lunatics and idiots chargeable on the poor's rate in 1836, or 1 in 881; in England 1 in 1833. In 1836-7 there were 1861 bastard children chargeable on the poor's rate, or 1 in 293 of the whole population; in England 1 in 215. The number of illegitimate births in 1830 was 425, or 1 in 22; in England 1 in 20. The number affiliated in 1834-5 was 305, and 162 in 1835-6. In 1840 the proportion per cent. of persons married under 21 years of age was 10.4; in England and Wales 9.6, for the two sexes.

The annual value of real property assessed to the property tax in 1815 was £1,269,579; property assessed to occupiers, 906,925; and the profits of trades, professions, &c., were assessed at 685,582. In 1824-5 the central proportion of the various descriptions of property assessed was:—land, 50 parts; dwelling-houses, 31.3 parts; mills, factories, &c., 4.4 parts; manorial profits, &c. 1.9 parts.

The net rental or annual value of real property assessed to the poor's rate in 1841 was as follows:—

| On landed property | 713,300 |
| Dwelling-houses | 300,427 |
| All other kinds of property | 396,930 |
| **Total** | **1,609,747** |

In the above the total amount levied for poor-rates was £171,435, being a rate of 9s. 1d. in the pound on the annual value of real property assessed. Taking the total annual value of real property in the county in 1841, the rate per head was 4.3s. 1d. for each inhabitant; and dividing it by the number of acres was 1.7s. 6d. per acre, which is the same as for Lancashire, and is only exceeded by Middlesex and Worcestershire.

The county-rate levied at different periods, and the principal disbursements for the same periods, are shown in the following table:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Income</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1819-20</td>
<td>£704</td>
<td>£600</td>
</tr>
<tr>
<td>1821-22</td>
<td>£760</td>
<td>£740</td>
</tr>
<tr>
<td>1823-24</td>
<td>£830</td>
<td>£800</td>
</tr>
</tbody>
</table>

The particulars of the county expenditure in 1831 are as follows:—

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges, building, repairs, &amp;c.</td>
<td>£500</td>
</tr>
<tr>
<td>Gaols, houses of correction, and maintaining prisoners</td>
<td>£500</td>
</tr>
<tr>
<td>Shire-halls and courts of justice</td>
<td>£500</td>
</tr>
<tr>
<td>Lunatic asylums</td>
<td>£500</td>
</tr>
<tr>
<td>Prosecutions</td>
<td>£500</td>
</tr>
<tr>
<td>Clerk of the peace</td>
<td>£500</td>
</tr>
<tr>
<td>Conveyance of prisoners before trial</td>
<td>£500</td>
</tr>
<tr>
<td>Vagrants, apprehending and conveying</td>
<td>£500</td>
</tr>
<tr>
<td>Constables, high and special</td>
<td>£500</td>
</tr>
<tr>
<td>Coroner</td>
<td>£500</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>£500</td>
</tr>
</tbody>
</table>

**Total**: £15,330

The length of streets and highways, and the expenditure thereon, were as under in 1839:—

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streets and roads repaired under local acts</td>
<td>£2,000</td>
</tr>
<tr>
<td>Turnpike roads</td>
<td>£2,000</td>
</tr>
<tr>
<td>All other highways</td>
<td>£3,000</td>
</tr>
</tbody>
</table>

**Total**: £7,000

**Amount of rates levied**: £3,572.

**Expenditure in repaired highways**: £2,380.

**Law and other expenses**: £450.

**Total expenditure**: £3,292.

The number of turnpike trusts, in 1840, was 33; the income from tolls was £7,7292; parish compositions is £5,835; and total income, £26,850/. The total expenditure for the same year was £23,854. The best and mortgage debts amounted to £3,570. In 1840 the debt was equal to 3 years' revenue. For the whole of England the proportion of income to debt being 4:5 years: the proportion of unpaid interest to the total debt was, in Warwickshire, 8 per cent.; in England 12 per cent. The state of the county, as in 1841, is shown in the following table: the last column is an ordinary of the number of years which would be required for each trust to discharge its entire debts, taking the surplus revenue of the year 1840 as an annual surplus:—

<table>
<thead>
<tr>
<th>Trust</th>
<th>Total</th>
<th>Net</th>
<th>Equivalent Debt</th>
<th>Rate of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birmingham and Spenal Ash</td>
<td>£4,272</td>
<td>£4,116</td>
<td>£2,000</td>
<td>500</td>
</tr>
<tr>
<td>Birmingham and Bolliedge</td>
<td>£1,072</td>
<td>£1,064</td>
<td>£1,064</td>
<td>100</td>
</tr>
<tr>
<td>Birmingham and Woodside</td>
<td>£11,055</td>
<td>£12,418</td>
<td>£5,000</td>
<td>200</td>
</tr>
<tr>
<td>Castle Bromwich and Birmingham</td>
<td>£2,000</td>
<td>£1,810</td>
<td>£1,810</td>
<td>500</td>
</tr>
<tr>
<td>Coventry and Watery</td>
<td>£782</td>
<td>£782</td>
<td>£782</td>
<td>100</td>
</tr>
<tr>
<td>Drochchurch and Shobnall</td>
<td>£1,000</td>
<td>£500</td>
<td>£500</td>
<td>100</td>
</tr>
<tr>
<td>Bromham, Alcester Diaries</td>
<td>£3,853</td>
<td>£3,853</td>
<td>£3,853</td>
<td>100</td>
</tr>
<tr>
<td>Ilmichley and Coventry</td>
<td>£5,000</td>
<td>£5,000</td>
<td>£5,000</td>
<td>100</td>
</tr>
<tr>
<td>Meneston to Watery Heath</td>
<td>£2,000</td>
<td>£2,000</td>
<td>£2,000</td>
<td>200</td>
</tr>
<tr>
<td>Rugby and Lutterworth</td>
<td>£1,500</td>
<td>£1,500</td>
<td>£1,500</td>
<td>100</td>
</tr>
<tr>
<td>Rugby and Warwick</td>
<td>£2,500</td>
<td>£2,500</td>
<td>£2,500</td>
<td>100</td>
</tr>
<tr>
<td>Stratford and Somersby</td>
<td>£2,000</td>
<td>£2,000</td>
<td>£2,000</td>
<td>100</td>
</tr>
<tr>
<td>Stratford and Long Compton</td>
<td>£10,000</td>
<td>£10,000</td>
<td>£10,000</td>
<td>200</td>
</tr>
<tr>
<td>Warwick and Coventry</td>
<td>£1,500</td>
<td>£1,500</td>
<td>£1,500</td>
<td>100</td>
</tr>
<tr>
<td>Warwick, Piddockstall, &amp;c.</td>
<td>£1,500</td>
<td>£1,500</td>
<td>£1,500</td>
<td>100</td>
</tr>
</tbody>
</table>

In 1839 the church-rates in Warwickshire amounted to £6357; and 3914", applicable to the same objects, was derived from 'other sources,' the amount from estates and rent charges, included under this head, being £2355, in 1832. The sum of £6357 was expended in 1833 for the purposes of the establishment, of which £955 was for repairs of churches. There was a debt of £7444 secured on the church-rates.

**Crime.**—Number of persons charged with criminal offences in the septennial periods ending 1819, 1826, 1833, and 1840.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1819-20</td>
<td>2,624</td>
</tr>
<tr>
<td>1820-26</td>
<td>3,693</td>
</tr>
<tr>
<td>1827-33</td>
<td>4,650</td>
</tr>
<tr>
<td>1834-40</td>
<td>5,627</td>
</tr>
</tbody>
</table>

**Total**: 2,624 3,693 4,650 5,627

**Income**: £704; 21,905; 21,777; 21,881.
The numbers committed, convicted, and acquitted in each year from 1834 to 1842 were as under:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Committed</th>
<th>Acquitted</th>
<th>Convicted</th>
<th>Discharged</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>680</td>
<td>460</td>
<td>220</td>
<td>1,360</td>
<td>2,260</td>
</tr>
<tr>
<td>1835</td>
<td>621</td>
<td>484</td>
<td>237</td>
<td>1,342</td>
<td>2,294</td>
</tr>
<tr>
<td>1836</td>
<td>589</td>
<td>471</td>
<td>240</td>
<td>1,359</td>
<td>2,279</td>
</tr>
<tr>
<td>1837</td>
<td>569</td>
<td>458</td>
<td>232</td>
<td>1,358</td>
<td>2,269</td>
</tr>
<tr>
<td>1838</td>
<td>572</td>
<td>480</td>
<td>240</td>
<td>1,392</td>
<td>2,324</td>
</tr>
<tr>
<td>1839</td>
<td>556</td>
<td>468</td>
<td>238</td>
<td>1,362</td>
<td>2,354</td>
</tr>
<tr>
<td>1840</td>
<td>550</td>
<td>460</td>
<td>230</td>
<td>1,340</td>
<td>2,340</td>
</tr>
</tbody>
</table>

In 1834 the proportion of persons committed, to the total population of the county, was in 1:310; and in 1841 the proportion was in 1:400. The population of the county is shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>7,133</td>
</tr>
<tr>
<td>1835</td>
<td>7,633</td>
</tr>
<tr>
<td>1836</td>
<td>8,133</td>
</tr>
<tr>
<td>1837</td>
<td>8,633</td>
</tr>
<tr>
<td>1838</td>
<td>9,133</td>
</tr>
<tr>
<td>1839</td>
<td>9,633</td>
</tr>
<tr>
<td>1840</td>
<td>10,133</td>
</tr>
</tbody>
</table>

Education.—Summary of Returns made to Parliament in 1833:—

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Schools</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant-schoools</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Number of children at such schools; ages from 2 to 7 years:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>983</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>983</td>
<td></td>
</tr>
<tr>
<td>Sex not specified</td>
<td>1,227</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,493</td>
<td></td>
</tr>
<tr>
<td>Daily-schools</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Number of children at such schools; ages from 4 to 14 years:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>11,447</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>8,940</td>
<td></td>
</tr>
<tr>
<td>Sex not specified</td>
<td>3,292</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23,680</td>
<td></td>
</tr>
</tbody>
</table>

The distribution of the sums invested in 1830, 1834, and 1839 is shown in the following table:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Deposits in Government Securities</th>
<th>Deposits in County Funds</th>
<th>Deposits in Stocks</th>
<th>Total Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>200,000</td>
<td>100,000</td>
<td>50,000</td>
<td>350,000</td>
</tr>
<tr>
<td>1834</td>
<td>250,000</td>
<td>150,000</td>
<td>60,000</td>
<td>460,000</td>
</tr>
<tr>
<td>1839</td>
<td>300,000</td>
<td>200,000</td>
<td>70,000</td>
<td>570,000</td>
</tr>
</tbody>
</table>

The deposits of 175 friendly societies, not reckoned above, amounted, in 1840, to 17,580l.; and 5726l. were invested by 136 charitable institutions.

The following particulars respecting the state of the jails in the county, for the year ending 29th November, 1842, are from a parliamentary paper dated 24th of May, 1843:—

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Depositors</th>
<th>Number of Salaries</th>
<th>Total Number</th>
<th>Net surplus on Management</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atheerstone</td>
<td>681</td>
<td>£31</td>
<td>£100</td>
<td>£330</td>
<td></td>
</tr>
<tr>
<td>Birmingham</td>
<td>10,479</td>
<td>390</td>
<td>390</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>Coventry</td>
<td>1,570</td>
<td>111</td>
<td>150</td>
<td>1,830</td>
<td></td>
</tr>
<tr>
<td>Rugby</td>
<td>518</td>
<td>50</td>
<td>50</td>
<td>575</td>
<td></td>
</tr>
<tr>
<td>Stratford</td>
<td>660</td>
<td>40</td>
<td>40</td>
<td>640</td>
<td></td>
</tr>
<tr>
<td>Sutton</td>
<td>360</td>
<td>40</td>
<td>40</td>
<td>440</td>
<td></td>
</tr>
<tr>
<td>Warwick</td>
<td>2,188</td>
<td>160</td>
<td>220</td>
<td>1,640</td>
<td></td>
</tr>
</tbody>
</table>

Total | 14,372 | 1,133 | 1,830 | 8,375 |

The schools established by Disenactors, included in the above table, are:—

<table>
<thead>
<tr>
<th>Schools</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant-schools</td>
<td>4, containing 400</td>
</tr>
<tr>
<td>Daily-schools</td>
<td>21</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>102</td>
</tr>
</tbody>
</table>

The schools established since 1818 are:—

<table>
<thead>
<tr>
<th>Schools</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant and other daily schools</td>
<td>349, containing 12,440</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>191</td>
</tr>
</tbody>
</table>

Lending libraries of books were attached to 66 schools in 1833.

Sixteen Sunday-schools are returned from places where no other school existed. Sixty-six schools, containing 3,901 children, were both Sunday and day-schools. The number of boarding-schools is fifty-four, and the scholars are included in the above returns. The total number of children returned as attending Sunday and day-schools of all kinds is 60,273, which was above two-thirds of the total number of children in the county between the ages of 2 and 15.

WASHINGTON, the capital of the United States, is situated on the left bank of the Potomac, and on the right bank of the Anacostia, or Eastern Branch, about 38° 40' N. lat. and about 77° W. long. from Greenwich, according to Arrowsmith. By an act of Congress, passed in 1790, it was declared that the seat of government should be established at some place on the Potomac, and the district around Georgetown was ultimately ceded to the United States by Virginia and Maryland for this purpose. In 1792 the government advertised for plans of a capital and president's house. The name of Washington was

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ultimately bestowed upon the federal city; and, in conformity with the act of Congress alluded to, the west of government was transferred thither from Philadelphia in 1800. The president and other chief executive officers of the federal government have since resided at Washington: Congress meets there every year on the first Monday of December, and the Supreme Court of the United States holds its annual sessions, beginning on the second Monday of January.

Washington is separated from Georgetown by Rock Creek, over which there are several bridges, and from Alexandria by the Potomac, a bridge upwards of a mile in length. There are also several bridges over the Anacostia. This river has a sufficient depth of water for frigates to ascend, without being lightened, above the city, and, with its tributary, the Patuxent, which, drawing fourteen feet can come up to Potomac Bridge, whence to the mouth of the Tiber, a small stream which flows through the middle of the city, there are nine feet of water at ordinary high tides. A spacious canal unites the Potomac with the Patuxent, which is situated near the head of the tide-water navigation, and is connected with the interior by the Chesapeake and Ohio canal. The city is well supplied with water, and has in front (south) the Potomac, nearly a mile in width, and a range of heights in the rear (north), affording many fine sites.

The city was regularly laid out, according to the design of Major L'Enfant, but only a small part of the ground embraced within the plan is built upon. The Capitol is the central site; a large square, nearly a mile wide, named after the states of the Union, are to extend from it to the most important public buildings, or the places which offer the finest prospects. These avenues intersect diagonally square blocks formed by streets crossing each other at right angles. The streets of the capital are designated by the letters of the alphabet, A, north, A, south, &c.; those east and west of it are numbered, 1st east, 1st east street, 1st street west, &c. The streets are from 70 to 200 feet wide. The effect of the partial filling up the magnificent plan of the city was thus described by Basil Hall in 1827—‘This singular capital is so much scattered, that scarcely any of the ordinary appearances of a city strike the eye. Here and there ranges of buildings are starting up, but by far the greater number of the houses are detached from one another. The streets, where streets there are, have been made so unusually wide, that the connection is quite loose; and the whole affair, to use the quaint simile of a friend at Washington, looks as if some giant had been in a box of his children at random over the ground.’ Mrs. Trollope, who will scarcely be suspected of undue partiality, and who visited Washington much about the same time, speaks more eulogistically of its appearance,—‘The whole aspect of Washington, light, graceful, and spacious, is full of the best ideas of art; and the various departments of the government are each placed in its respective situation, the Navy-yard and arsenal immediately to the north of it, are situated on the Anacostia, just below the low bridge which spans the Potomac and connects the Mary-land and Virginia shores. The Navy-yard are attached marine barracks, and to the arsenal public manufactories of arms and military stores. The river, on arriving at Washington, makes a beautiful sweep, forming a bay, on which the city stands. The navy-yard and arsenal fravc the curve.’ The representatives' chamber, at the south wing, is also a semicircle: it is 75 feet long and 60 feet high. The dome is supported by twenty-six columns and pilasters of Potomac marble. A colossal statue of Liberty and a statue of History are the principal ornaments of the hall. The Senate chamber, and nearly of the same form and dimensions, is the hall in which the sessions of the Supreme Court are held. Below the representatives' chamber are committee-rooms and other places of business.

The government's Bank is on the hill at the opposite extremity of Pennsylvania avenue from the Capitol. It is a handsome building two stories high, with a lofty basement. 190 feet long by 86 wide. In convenient proximity to the mansion are four simple and commodious brick houses which contain offices and establishments of the postal departments. The General Post-Office contains also the Patent-Office. Ample areas are left round each, whose shrubs and grass refresh the eye. The Patent-Office contains models of all the mechanical inventions produced by the genius of the country, and is visited by persons from remote districts, who had been spurred by necessity to invent substitutes for human labour, and brought them to Washington for patents. At the secretary of state's office are shown by autographs of the potomac marble. There are or have been in alliance with the Union, and the presents made by foreign courts to American ambassadors. At the office for Indian affairs are the portraits of all chiefs who have from time to time come to negotiate with the president. This quarter of the city is almost entirely given to private houses, most of which are occupied by the foreign ministers.

The navy-yard, and the arsenal immediately to the north of it, are situated on the Anacostia, just below the low bridge which spans the Potomac and connects the Maryland and Virginia shores. The navy-yard and arsenal are attached marine barracks, and to the arsenal public manufactories of arms and military stores. The river, on arriving at Washington, makes a beautiful sweep, forming a bay, on which the city stands. The navy-yard and arsenal fravc the curve.

Near the arsenal is a penitentiary. There are besides in Washington a city-hall, four market-houses, twenty churches, an orphan asylum, almshouse, &c. Columbian College, which was incorporated by Congress in 1821, is a grand institution, and has the honour of containing the oldest college in the Union, and a library of 4200 volumes. A medical department is attached to this college. There is also a college under the direction of Roman Catholics at Georgetown, which has nineteen instructors and a library of 22,000 volumes.

The census of 1840 gives 23,264 as the total inhabitants of Washington. The total inhabitants of the federal district of Columbia was 43,712; of whom 7312 resided in Georgetown, 8459 in Alexandria, and 4077 in the city of Washington. 28 are said to have been employed in agriculture, 103 in commerce, 886 in manufactures and trades; 45 were seen of the long voyage, 25 navigators of lakes, canals, and rivers, and 63 mechanics and the learned professions in two colleges in the vicinity of Washington had 284 students in 1840. There were in the city 12 academies and grammar-schools, with 609 scholars; 9 primary and common schools, with 167 scholars; and 213 scholars were
supported at the public expense. There were in the city 383 white persons upwards of 20 years of age, who could neither read nor write. There were 640 male and 1064 female slaves; 1949 males and 2868 female free persons of colour; 8025 male and 8647 female white persons.

The population of Washington consists of members of the legislature and of the executive departments of state and of foreign diplomats, with the addition of such professional, trade, and domestic workers as are required to minister to their comfort. The tone of society, as might be anticipated from this circumstance, differs considerably from that which prevails in other parts of the Union. Owing to the influence of the example left by the foreign diplomats, it approaches more nearly in some respects to that of Europe. On the other hand, the elective character of the legislature and executive government occasions an ample supply of specimens of all the peculiarities of practice and conduct, which are current in the United States. Washington. The fashionable amusements are as in Europe—balls, soirees, dinner parties, and promenades. Washington does not support a permanent dramatic company. It is said that there is a good deal of high play. The sociality of both is ample. The finer arts are less cultivated, though the Capitol affords a fair promise for the future.

(The American Almanac; The Sixth Census of the Inhabitants of the United States; Encyclopaedia Americana; Memoirs of降温 for Persons; Travels of Captain Hall, Mrs. Trollope, Mr. Dickens, and the Author of 'Cyril Thornton.')

WASHINGTON, GORGE, was born in Westmoreland county, Virginia, on the 22d of February, 1732. The first of the Washington family, and the eldest son of the eldest and a daughter. The mother of George Washington survived to see her son president. Augustine Washington left all his children in a state of comparative indepen-...
and establish a uniform system of manoeuvres and discipline.

In 1753 the French in Canada pushed troops across the lakes, and at the same time bodies of armed men ascended from New Orleans to form a junction with them, and establish themselves on the upper waters of the Ohio. Governor Dinwiddie resolved to send a commissioner to confer with the French officer in command, and inquire by what authority he occupied a territory claimed by the British. This charge required a man of discretion, accustomed to travel in the woods, and familiar with Indian manners. Washington was selected, not withstand his own weakness of the post.

He set out from Williamsburg on the 31st of October, 1753, and returned on the 10th of January, 1754. He discovered that a permanent settlement was contemplated by the French within the British territory; and, after making the interview of the governor, he contrived to bring back with him a plan of their fort on a branch of French Creek, 15 miles south of Lake Erie, and an accurate description of its form, size, construction, cannon, and barracks.

The military establishment of the colony was increased to six companies: Colonel Fry, an Englishman of scientific acquirements and gentlemanly manners, was placed at the head of them, and Washington was appointed second in command. His first campaign was a tryout, 'for the sake of the soldier' for him, and he did it with three small companies to occupy the outposts of the Ohio, in front of a superior French force, and unsupplied by his commanding officer. Relying upon his own resources and the friendship of the Indians, Washington pushed into the Ohio Valley on the 27th of July, 1754, and defeated a detachment of the French army under M. de Jumonville, who fell in the action. Soon after Colonel Fry died suddenly, and the chief command devolved upon Washington. Inns, the commander of the North Carolina troops, was elected by the assembly, and a new commander never took the field. An ill-timed parsimony had occasioned disgust among the soldiers, but Washington remained unconquered. Anticipating that a strong detachment would be sent against him from Fort Duquesne, he left at once to join the assembly, and entrenched himself on the Great Meadows. The advance of the French in force obliged him to retreat, but this operation he performed in a manner that elicited a vote of thanks from the House of Burgesses.

In 1755 Colonel Washington acceded to the request of General Braddock to take part in the campaign as one of his military family, retaining his former rank. When privately consulted by Braddock, 'I urged him,' wrote Washington, 'I advised him to push it. I don't know if he ever did it with a small but chosen band, with such artillery and light stores as were necessary, leaving the heavy artillery and baggage to follow with the rear division by slow and easy marches.' This advice prevailed. Washington in his turn had to leave, and was divided by the division in which he was only able to join the rear division on the evening before the battle of the Monongahela. In that fatal affair he exposed himself with the most reckless bravery, and when the soldiers were finally put to the rout, hastened to the rear division to order up horses and wagons for the wounded. The panic-struck army dispersed on all sides, and Washington retired to Mount Vernon, which had now, by the death of his brother, become his own property. His bravery was universally admitted, and it was said that latterly his prudent counsels had been disregarded.

In the autumn of the same year he was appointed to reorganize the provincial troops. He retained the command of the troops until 1758. The tardiness and irresolution of provincial assemblies and governors confined him to act during much of this time upon the defensive, but to the necessity he made up his mind and, his no less for the matter of the army, but himself before him. The Virginia troops remained on the footing of militia, and Washington had ample opportunities to convince himself of the utter worthlessness of a militia in time of war: in the beginning of the war, Washington had prevented the Virginia troops from joining the expedition. The Virginia troops had been called out, but they were not called upon to perform any service of importance. The Virginia troops had been called out, but they were not called upon to perform any service of importance. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve. He was appointed an officer of the Virginia troops, but he refused to serve.
principles both of the war of detail and the war of large masses: On the other hand, his punctual habits of business, his familiarity with the details both of agriculture and commerce, and the experience he had acquired as trustee, arbitrator, and member of the House of Burgesses, were so many preparatory studies for the duties of the statesman. He commenced his great task of first liberating and then governing a nation, with all the advantages of this vast country. Beyond the sea his labors were directed to the physical vigour is undiminished and the intellect fully ripe. He persevered in it, with a brief interval of repose, for upwards of 20 years, with almost uniform success, and with an exemption from the faults of great leaders unparalleled among his countrymen. Washington was elected commander-in-chief on the 15th of June, 1775; he resigned his commission into the hands of the president of Congress on the 23rd of December, 1783. A few days after his appointment he left Philadelphia to join the army at Cambridge, Massachusetts. The particular of the battle of Bunker's Hill reached him at New York, and increased his anxiety to hasten forward. He arrived at Cambridge on the 2nd of July, and assumed the command on the 29th, at which time the army consisted of about 17,000 men, collected on the spur of the moment, occupying a range of posts disproportioned to their numbers, and almost under the guns of the enemy. There were few stores, no military chest, and no adequate funds. Washington was received with astonishment that there was not powder enough in the camp to supply nine cartridges for each man. There was much discontent among the general officers on account of the manner in which the appointment was made by Congress; the subordinate officers and privates formed themselves into parties, referring their complaints to Congress. Washington proceeded to mature his plans. The army was formed into six brigades of six regiments each. The commander-in-chief, colonel, were, whenever it was practicable, brought together and placed under a commander from that colony. All the officers were commissioned anew by Congress, and by degrees a continental army was formed. He kept up an uninterrupted correspondence with Congress, which, though tardily, adopted all his important suggestions. He corresponded also with the heads of the provincial governments, and subsequently with the governors and legislatures of the several states. He thus became not only the creator of the volunteer army, but the invariable leader of the army, and the machinist between it and the numerous and complicated depositaries of power in the United States.

The army was at first distributed into three grand divisions of two brigades each: the division forming the left was stationed near the Schuylkill, under General Lee; the centre division at Cambridge, under Major-General Putnam; the right wing at Roxbury, under Major-General Ward. The head-quarters of the commander-in-chief were with the last named and the place was fitted up with little alteration till far in January, 1776. During that interval the regular army, by the departure of many of whose term of enlistment had expired, and in consequence of the slow progress of the recruiting, was reduced to 2500 men, to whom were added 10,000 provincials, who were to remain only till the middle of January. 'Search the volumes of history through,' Washington wrote at this time, 'and I much question whether a case similar to ours is to be found, namely, to maintain a post, and to maintain it with a body of men who were together without powder, and then to have our army disbanded and another to be raised within the same distance of a reinforced enemy.' During this time he detached 1100 men, under Arnold (14th September), in the direction of the Schuylkill and spring hills, and from the New England ports. Occasional cannonades and skirmishes took place at the advanced posts. But no decisive blow could be hazarded, and the patience and forbearance of the commander-in-chief were severely tried by the cabals of the officers, the undisciplined habits of the men, and the pragmatical conduct of the civil authorities.

Towards the end of December, 1775, General Howe, who had succeeded Clinton as commander-in-chief, was closing in to Boston harbour for some secret enterprise. General Lee was despatched to place New York in a state of defence, but the expedition proved to be destined against North Carolina. Washington became impatient to attack Boston, but was twice overruled by a council of war—on the 16th of January and on the 10th of February, 1776. At last, on the 15th of March, the Americans took possession of Dorchester Heights; and on the 17th the British evacuated Boston. As soon as the British fleet had put to sea, Washington set out for New York, before the enemy returned to the camp. He perceived the physical vigour is undiminished and the intellect fully ripe. It was the 29th of March when Howe's forces appeared off Sandy Hook; but the deficient means at Washington's command, and the strength of the royalist party in New York, had materially impeded his preparations for the defence. The immediate loss of some of Washington's officers enabled the enemy to gain the possession of Long Island on the 27th of August; and the weakness of his army and fears of the soldiers obliged him in succession to evacuate New York, cross the Hudson, and retreat behind the Delaware. Congress at last saw the necessity of raising a regular army of men enlisted for a longer period than a year, and of investing Washington with dictatorial powers. Thus strengthened he remodelled his troops, recrossed the Delaware on the night of the 29th of December, 1776, and invested New York with garrison and fortifications. The American forces had received a supply of arms from France, but he was still uncertain of his new lieves. He was also kept in suspense by the real designs of the British commander. It was only an object to the English the command of the Hudson, keep up the communication between New York and Canada, and isolate the eastern from the western states. But there was also danger in leaving Philadelphia exposed, and as her French spruce, with the few of their troops. The British took possession of Philadelphia after the battle. On the 16th of December Washington began to construct a fortified encampment at Valley Forge. He was at this time harassed by Debts among the general officers, Benno the, and Mifflin, aided by a small party in Congress, conspired to have him removed from the command. The good sense of the majority in Congress frustrated the plot, and the attachment of the soldiers, heightened by the enthusiasm with which they had followed the British flight into Washington's scale, kept the army in good temper. The winter was however a trying one for the troops. Owing to the derangement of the commissariat, the men were in a bad state of health, and this was due to the bad times even with food. With the experience of three campaigns, Washington now set himself to plan an entire remodelling of the army. He invited the general officers to state their sentiments on the subject in writing. Congress at the same time appointed a commission to visit the camp, which remained there three months. With great difficulty the commander-in-chief wrung from Congress the promise of half-pay for seven years for the officers, and a gratuity of 80 dollars for each non-commissioned officer and private for the duration of the war. The ratification of the treaty with France was celebrated in the camp with great solemnity on the 8th of May. The British in Philadelphia, though only twenty miles distant from the American camp, allowed the French ships without interference to sail up to within sight of the war. The ratification of the treaty with France was celebrated in the camp with great solemnity on the 8th of May. The British in Philadelphia, though only twenty miles distant from the American camp, allowed the French ships without interference to sail up to within sight of the war. The ratification of the treaty with France was celebrated in the camp with great solemnity on the 8th of May. The British in Philadelphia, though only twenty miles distant from the American camp, allowed the French ships without interference to sail up to within sight of the war.
and four frigates, arrived about the same time off Sandy Hook. The American army was engaged for four months in arrangements for the defence of New England; during which interval the English laid New Jersey waste. Washington in December retired into winter-quarters—distributing his troops in line of cantonments around New York extending from Long Island Sound to the Delaware.

During the whole of 1779 Washington retained his position in the highlands of the Hudson, and remained on the defensive. An expedition fitted out to chastise the Indians was successful. The British, in a number, moved toward the Jerseys, but Washington covered New Jersey. Baron Steuben effected an improvement in the discipline and evolutions of the American army.

Lafayette returned from a visit to France before the end of April. The intelligence that the French government had fitted out an armament of land and naval forces which might soon be expected in the United States. Rochambeau arrived at Newport, Rhode Island, on the 10th of July. A plan of combined operations against the British was recommended by the states to the French commanders. The naval superiority of the English however prevented anything being done, and the year wore away unmarked by any incidents, except the treason of Arnold and the execution of André.

Congress, yonder, the English were defeated and Rochambeau and his army returned to France. Washington was in pain at the news of the retreat of the French, and he wrote to the American commanders that all troops to be raised in future should be enlisted to serve during the war, and that all officers who continued in service to the end of the war should be entitled to half pay for life. The army went into winter-quarters towards the end of October at the Jersey line near Newburgh, the New Jersey regiments at Pampton, and the eastern troops in the Highlands, while the head-quarters were at New Windsor, on the Hudson.

The year 1780 opened with a mutiny in the Pennsylvania and New Jersey regiments, instigated by the promptitude and self-possession of Washington. He was now strengthened not only by a French auxiliary army, but by liberal supplies from France. The main source of his weakness was the want of a civil government to support him. The Congress, which made war, declared independence, formed treaties of alliance, sent members to foreign courts, emitted paper currency, and pledged the credit of all the states for its redemption. "Ventured," says Mr. Sparks, "to raise troops, levied taxes, clothe and feed their naked and starving soldiers, Tilly with the French fleet entered the Chesapeake in February, but returned without injuring Arnold's squadron. Lafayette, whom Washington had despatched at the same time, was received in Virginia, and Cornwallis, who had advanced from North Carolina, in cheek. Washington had repeated interviews with the French commanders to concert a plan of campaign. On the 4th of July he encamped near Dobb's Ferry, and was joined on the 8th by the French army. Armour, at the request of Rochambeau, was sent to New York, and a letter intimating that De Grasse, who commanded the French fleet, could not remain on the coast after October, decided him to relinquish the siege of New York and advance into Virginia with all the French troops and as many of the American as could be spared from the defence of the posts on the Hudson and in the Highlands. Washington and Rochambeau reached Lafayette's head-quarters at Williamsburg in Virginia, on the 14th of September, and previously sent the Chesapeake and landed 9000 men from the West Indies, from the Lafayette. Cornwallis took possession of York Town and Gloucester on the opposite side of York river in Virginia. The American and French generals advanced from Williamsburg to York Town in September and October. Cornwallis proposed a cessation of hostilities on the 17th of October, and signed the articles of capitulation on the 19th. Two thousand continental troops were marched to reinforce General Greene in the southern army. Washington remained at Williamsburg; the American forces were marched into winter-cantongments in New Jersey and on the Hudson.

Hitherto Washington had to struggle against the apathy engendered by fear; now he had to check the remainder which sprung from an over-estimate of success. 'Whatever,' he said, 'may be the policy of European courts during this winter, their negotiations will prove too precocious a dependence for us to trust to. Our wisdom should dictate a serious preparation for war, and, in that state, we shall find ourselves in a situation secure against every event.' Congress concurred in these sentiments. The commander-in-chief addressed circular letters to the governors of all the states, urging them to make strenuous exertions for carrying on the war. In the middle of April he joined the army and established his head-quarters at Newburgh. Little progress was made by the states in filling up their quotas, and on the 8th of May he was obliged to remonstrate with them in energetic terms. Great discontent, occasioned in the camp and among the soldiers, he had experienced, and a wish spread that Washington should establish a monarchy in the United States. In the meantime negotiations for peace were commenced, the French army withdrawn, and the American army, after an inconsiderable remission in its operations, was dismissed, and the sending of troops was suspended in an angry correspondence between the officers of the army and Congress. An address from Washington (18th March, 1783) was required to restore the good temper of the officers. Having pacified them, he became their advocate and securing their promises to the demand. On the 8th of June he addressed his last official communication, a circular letter to the governors of the states, urging upon them— an indissoluble union of the states; regard to public justice; the adoption of a proper military establishment; and the observation of the laws and the execution of the laws of the different states. On the 25th of November the British evacuated New York. On the 4th of December Washington took a solemn farewell of the officers of the army. And on the 23rd of December he resigned his commission to the head of the new executive department.
of war. Randolph had the post of attorney-general. The appointments to the supreme court cost him much anxious study and work, and his health, after making those appointments, undertook a tour through the eastern states, and returned to be present at the opening of Congress in January, 1790.

In his opening speech he recommended to the attention of the officers a system of laws for naturalizing foreigners; a uniform system of currency, weights, and measures; the encouragement of agriculture, commerce, and manufactures; the promotion of science and literature; and an effective system for the support of schools. Knox and Randolph advocated the establishment and vehement debates. At last, Hamilton's plan for funding all the domestic debts was carried by a small majority in both Houses of Congress. The president supported the sentiments of the president pro tempore in Congress, but he approved the act for funding the public debt, and was from conviction a decided friend to the measure. The foreign relations of the country, though not complicated, were in an unsettled condition. Washington despatched Gouverneur Morris as a private agent to ascertain the views and intentions of the British ministers. He reluctantly commenced an Indian war, which lasted during the greater part of his administration. For the first year of his presidential term, however, he was chiefly engaged in proposing the national position of the United States in the system of nations.

The second session of Congress was mainly occupied with debates on the erection of a national bank. The two great sections of public opinion, which have under different names often operated commerce, had in some measure taken up their respective grounds on the question of funding the debt. Their organized hostility became more apparent in the debates on the project of a national bank. Both parties were represented in the cabinet: Knox and Hamilton advocated the establishment of the bank; Jefferson and Randolph denounced it as unconstitutional. The contest ended in the establishment of a bank, with a capital of ten millions of dollars, of which eight millions were to be held by individuals, and the rest by the United States. A plan, with some modifications, passed the House of Representatives, but was rejected in the Senate by the casting vote of the vice-president.

A circumstance insignificant in itself increased the bitterness of the contest out of doors. Democratic societies had been formed on the model of the Jacobins in the twelfth of Fructidor of France. Washington regarded them with perhaps exaggerated alarm, and the unmeasured expression of his sentiments on this head subjected him to a share in the attacks made upon the president's house of undue fondness for England and English institutions.

Advices from the American minister in London represented that the British cabinet was disposed to settle the differences between the countries amicably. Washington nominated Mr. Jefferson to the Secretary of State in Great Britain. The nomination, though strenuously opposed by the democratic party, was confirmed in the Senate by a majority of ten to one. The treaty negotiated by Jay was received at the seat of government in March, 1795. The treaty was soon after the ratification of the British cabinet summoned the Senate to meet in June to ratify it. The treaty was ratified. Before the treaty was signed by the president it was surreptitiously published. It was vehemently condemned, and public meetings against it were held to incite the execrations against the president. President nevertheless signed the treaty on the 18th of August.

When Congress met in March, 1796, a resolution was carried by a large majority in the House of Representatives, requesting the president to lay before the House all documents relating to the negotiations. Washington declined to furnish the papers; a vehement debate ensued; but in the end the majority hostile to the treaty yielded to the exigency of the case, and united in passing laws for its fulfilment.

The two houses of Congress met again in December. Washington had published on the 15th of September his farewell address to the United States. He now delivered his last speech. Congress, in consequence of the letter from Mr. Jefferson, the federalist candidate, had the highest number of votes; Jefferson, the democratic candidate, was consequently declared vice-president, the next.
Washington's commanding character and isolation from party had preserved this degree of strength to the holders of his own political views; his successor Adams being a partyman, by his injudicious if deliberate conduct of himself which the federalists turned the scale in favour of the democrats. Washington was present as a spectator at the installation of his successor, and immediately afterwards returned to Mount Vernon.

He survived till the 14th of December, 1796, but, except when summoned in May, 1798, to take the command of the provincial army on the prospect of a war with France, did not again engage in public business.

Washington had a sense of simple and substantial greatness. His passions were vehement, but concentrated, and thoroughly under control. An irresistible strength of will was the secret of his power. Luckily for his country this strong will was combined with a singularly well-balanced mind, with much sagacity, much benevolence, much love of justice. Without possessing a spark of what may be called genius, Washington was endowed with a rare quickness of perception and soundness of judgment, and an eager desire of knowledge. His extremely methodical habits, which in a person engaged in less important matters would almost have appeared ridiculous, enabled him to find time for everything, and were linked with a talent for organization. During the War of Independence he was the defensive force of America: wanting him, it would almost be as if the design of the mass movement had resolved itself into its elements. To place Washington as a warrior on the footing of the Cæsars, Napoléons, and Frederics, would be absurd. He lost more battles than he gained, and he lost them from defective strategy. But he knew the art of victory and kept up a spirit under more adverse circumstances than any other general ever did. His services as a statesman were pretty similar in kind. He upheld the organization of the American state during the first eight years of its existence, amid the storms of popular controversy, and gave it the stamp of solidity. No other American but himself could have done this: for all the American leaders, he was the only one of whom men felt that he differed from themselves. The rest were soldiers or civilians, federalists or democrats, but he was an American. Hence felt and blended with affection for his kindly qualities, and except for a brief period towards the close of his second presidential term, there has been but one sentiment entertained towards him throughout the Union—that of reverence, respect, affection, and confidence. Of those rare forms of great moral greatness followed without his appearing to seek for it.

Jefferson's sketch of Washington's character, quoted by Tucker, with the remark that it 'has every appearance of candour, as it praises without extravagance, qualifies its commendations, and arranges blame in the closest possible manner,' is valuable as coming from one who long enjoyed opportunities of close personal observation, was a shrewd judge of character, and the leader of the party opposed to Washington's general policy. It is as follows:

'His mind was great and powerful, without being of the very first order; his penetration strong, though not so acute as that of a Newton, Bacon, or Locke, and, as far as he saw, no judgment was ever sounder. It was slow in operation, clouded by imagination or imagination, but sure in conclusion. Hence the common remark of his officers, of the advantage he derived from counsels of war, where hearing all suggestions, he selected whatever was best in any plan generally ever planned his battles more judiciously. But he determined during the course of action, if any member of his plan was dislocated by sudden circumstances, he was slow in a re-adjustment. The consequence was, that he often failed in the field, and rarely gained a victory, as at Boston and York. He was incapable of fear, meeting objects with the most unconcern. Perhaps the strongest feature in his character was prudence, never acting until every circumstance, every consideration was maturely weighed; refining, if he saw a doubt, but when once decided, going through with his purpose, whatever obstacles opposed. His integrity was the most pure, his justice the most inflexible I have ever known; no motives of interest or consanguinity, of friendship or hatred, being able to bias his decision. He was indeed in every sense of the word a wise, a good, and a great man. His temper was naturally irritable and high-toned; but reflection and resolution had obtained a firm and habitual ascendency over it. If ever however it broke its bonds, he was not only generous, but very, brave, honourable, but exact; liberality never expected what promised utility; but frowning and unfurling on all visionary projects, and all unworthy calls on his charity. His heart was not warm in its affections; but he was carefully cultivated every mean and every sentiment of him the sole and sole esteem proportionate to it. His person was fine, as exactly what one would wish; his deportment easy, stately, and noble; the best horseman of his age, and the most graceful figure that could be seen on horseback. Although he was of the circle of his father than the might be unversed in life and love, with safety, he took a free share in conversation, his colloquial talents were not above mediocrity, possessing no copiousness of ideas nor fluency of words. In public, when called on for a sudden opinion, he was unreserved, short, and embarrassed. Yet he wrote clearly, sufficiently, in an easy and correct style. This he had acquired by conversation with the world, for his education was merely reading, writing, and common arithmetic, to which he added surveying. His time was employed in serious, reading little, and that only in agriculture and English history. His correspondence became necessarily extensive, and with journalising his agricultural proceedings occupied most of his leisure hours within doors. On the whole his character was in its mass perfect, in nothing wanting except in freedom of speech; in this it was without virtue that never did nature and fortune combine more perfectly to make a man great, and to place him in the same constellation with whatever worthies have merited from man an everlasting remembrance. For his was the singular and very uncommon instance of a man who succeeded successfully through an arduous war for the establishment of its independence; of conducting its councils through the birth of a government new in its forms and principles, until it had settled down into a quiet and orderly train; and of subduing the risings of his countrymen with a firmness and a constancy never equalled in his career, civil and military, of which the history of the world furnishes no other example.'

(Jared Sparks, Life of Washington; Judge Marshall, Life of Washington; George Tucker, Life of Thomas Jefferson; Writings of George Washington, edited by Jared Sparks.)

WASHITA, or ONASHITA. [Mississippi River.]

WASP, the name familiarly applied in English to insects of the genus Vespa, of which there are several native species. In America, Vespa furtiva is common. France, Britain, and America have each a ground-wasp, as also is the Vespa rufa, a rare species making smaller nests and associated in less populous societies. Of tree-wasps we have Vespa holsatica of Linnaeus, which is the Vespa Anglica of Leach, and the Vespa germanica of the last-named author. A new British species has been described under the name of Vespa borealis, by Mr. Frederick Smith, in an interesting paper on British wasps, in the 'Zoologist' for June, 1843. It lives in fir-woods in Yorkshire and in the north of Scotland.

Wasps live in societies, composed of females, males, and neuters or workers, which are essentially females, but have the reproductive organs undeveloped or passive. The females are usually largest, but of them there are two sorts—one containing two large eggs which produce two sexes, while the other is about the same size, and lays only male eggs. The larger kind are produced later than the workers, and come forth to be queens and to found new colonies in the following spring. The queen is then started to become a new state, the queen-mother is at first an outcast and alone. Industry effects her greatness. With instinctive ambition, ere her subjects are born, she lays the foundations of her kingdom, building the first houses herself. She then gives birth to her only daughter, who feeds and nurses without assistance. 'At length,' to quote the animated description of Kirby and Spence, 'she receives the reward of her perseverance and labour, and is crowned by being a solitary, unconnected individual, in the autumn.'
number of her children and subjects, and in the edifice
they inhabit—the number of cells in a wasp
sometimes amounting to more than 16,000, almost all of
which contain either an egg, a grub, or a pupa, and
the cell serving for three generations in a year; which, after
making every allowance for failures and casualties, will
give a population of at least 80,000. Even at this time,
when there are no aerials of conductors, the in-
dustry of this creature does not cease, but she continues to
set an example of diligence to the rest of the community.
If, by any accident, before the other females are hatched,
the queen-mother perishes, the neuters cease their labours,
and the community perishes with her.

The community of wasps and its nest are called a
vespary. There are several hundred females in a large ves-
parly, few of which survive the winter. The survivors fly
about in spring actively engaged in preparations for their
further life and the rearing of the next generation. In
their youth they emerge from the pupas towards the end
of August, and at the same time with the males. They pair
in September and October. The males are about equal
in number with the females. Their habits are industrious,
and they are sociable even to a degree that makes them
faithful servants of the commonwealth of which they are
members. The food they collect is shared among all
with impartial justice. The worker bringing home his
pupae, perches on the top of the nest amid his
fellow-workers; the males of wasps have no digested
collected, fairly distributes them. When not occupied on
foraging expeditions, the neuters are employed in the
enlargement and repair of the nest. Celerity and order pre-
val in all their operations. Each of the masons has his
allotted space, an inch or an inch and a half in extent,
wherewith he conducts his plastering occupation, his mouth
serving as a hod, carrying a ball of ligneous fibre, pre-
noviously torn by his powerful jaws from gateposts, wood-
blocks, and neighbouring trees. This fibre, knitted to-
gether, builds up a frame of wood, or a skeleton, on
which are constructed the combs, each made up of a
number of hexagonal cells opening downwards. The
outside of the whole nest is covered with foliaceous layers.
It is probable that the substance of the comb is made from
the gelatinous American species, namely, by him from a fresh
mixture of sound and decayed. The nest of tree-wasps are
finest and closest in texture, which is necessary, since
they are so much more exposed to the vicissitudes of the
weather than those which are buried in the ground. Some
foresters have noticed that their nests of a solid and thick
pasteboard, impermeable to the rain; others diversify the
outside of their habitations with conical knobs of various
shapes and sizes, supposed to be defences against their
enemies. A person who entered within a few feet of the
entrance from the wet, the entrance-hall being so twisted as
to prevent the invasion of hostile insects. The cells of the
comb of the common European wasp are brown, and
coarse in texture; but where the larvae have spun their
combs on wood, they are of a fine and soft appearance.

Many years ago Azara stated that there are wasps in
South America which collect honey. This was at first
doubtful, but is now confirmed by M. Auguste St.
Hilare, who found near the river Uruguay nests of a wasp
constructed like those of the European species, containing
honey of an agreeable taste, but poisonous quality; and
Mr. Adam White has recently given a detailed description
of a species from the eastern States, which stores up honey in
tits comb. (See "Annals of Natural History," for June, 1841.) In our own
country the wasps are fond of honey, but obtain it by
plundering the bee-hives, which, being the more powerful
insects, they are enabled to do by main force. The bees,
suffering from the cold in the mornings and evenings of
the latter end of the season, retire into the snugger and
warmer recesses of the hive among the honeycomb, when the
wasps, not so delicate in constitution, take advantage of the unguarded entrances of the bee-hive and enter to levy
tribute. Rummaging up the inside, they gather the honey, and carry away all they can. Hornets, still more
impatient, attack the bees when laden with their treasures
in going homewards, and carry them off prisoners, to
which no quarter is shown. Both bees and wasps play great sacriency when the body of the captive is too
heavy for their strength, by cutting off the head and limbs
to lighten the weight.

Wasps have sentinel places at the entrances of their
nest to give an alarm in case of danger. If these guards
are seized and destroyed, the rest do not attack. Mr.
Knight observed that if a nest of wasps be approached
without alarming the inhabitants, and all communication
be suddenly cut off between those out of the nest and those
within it, no protest of the inhabitants of the former to defend
it and themselves. But if one escapes from within, it
comes out angrily, as if commissioned to avenge the wrong,
and will sacrifice its life in defence of the community.
Mr. Smith, in the paper referred to, has made some
interesting observations on the increase of the wasps. He
writes: 'I was curious to try the experiment, but in several instances I could not detect any wasp
apparently on duty; however, in Plumstead wood, last summer, I saw a wasp at the entrance of a nest, which
flew at me, and then going a little farther in. This I thought very like the actions of a sentinel, so
I got a piece of paling, and, watching my opportunity,
suddenly pushed it in an oblique direction into the ground,
so as to cut off all communication by that way. The sentin-
el flew at me, but I captured him in a little time, as
he was most perseveringly charging and recharging upon
me, and seemed determined to conquer or to die: the
latter was his fate. When I returned to the nest, a num-
ber of them, by the time I reached it, had declined to let me approach unheeded, but flew around me
to all appearance intent on revenge. Perhaps the sup-
posed sentinel, in his wide circulations, while attacking
me, had communicated the alarm.'

For full accounts of the habits of these interesting in-
sects, consult the writings of Rauzumur, and Kirby and
Spence's 'Introduction to Entomology.' For the charac-
ters of the family to which they belong, see VESPIDAE.

WASSELINNE, [Renn Bas.]

WASTE (from the French, ") is the committing of any
improper spoil or destruction in houses, lands, &c.,
by tenants for life or for years, to the damage of the heir
or of the person entitled in reversion or remainder. Waste
is either voluntary, which is an act of commission, or
pernicious, which is a state of condition or omission only.

Voluntary Waste chiefly consists—

1. In felling timber-trees. This kind of voluntary waste
is where a tenant takes good timber coming within the
description so to cut it off, especially for consumption by
himself, not as the former it was, and if it be larger than the former it is still waste, on the
ground that the new house will be more chargeable to
the fessor to repair. (1 Inst. 53, 4.)

2. In pulling down houses. If a lessee raises a house
and builds a new one not so large as the former it is
waste, and if it be larger than the former it is still waste,
on the ground that the new house will be more chargeable to
the fessor to repair. (1 Inst. 53, 4.) But the rule
which establishes that whatever is once annexed to the
freehold becomes part of it, and cannot be removed with
out doing waste, has been relaxed both as between land

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lord and tenant, and between the tenant for life and the remainder when worth. As between the landlord and tenant it is now settled that the latter may at any time during the currency of the lease take away all such chimney-pieces, wainscot, &c., vessels and other things necessary for trade, as he has himself erected, provided he do not thereby leave the house or building in a worse condition than when he entered: but he cannot do so after the expiration of the term without being guilty of trespass. The same doctrine appears to be established as between the tenant for life and the remainder-man; but as between the tenant for life and the remainder, it is wholly the only course of husbandry, but the evidence of the estate. (1 Inst., 53 b.) The latter reason can apply only to an unenclosed country.

5. In destruction of heir-looms. The destruction of heir-looms, whether under the name of heir-looms, are considered as part of the inheritance, is waste. Thus the tenant for life of a park, Warren, fish-pond, or dove-house, who kills so many of the deer, game, fish, or doves, as not to prevent the repair or storage, is guilty of waste. (1 Inst., 53 b.)

[Tenant for Life, TENANT FOR LIFE; TESTATE, TESTATE, &c.

Permissive waste consists chiefly in allowing the buildings upon an estate to go to decay. If a house was ruinous at the time when the tenant came into possession, he is not permitted to pull it down; but if it falls down, he is not bound to repair it; but it is waste to pull it down, unless he rebuilds it. (1 Inst., 53 a.) It is a general rule that the waste which arises from the act of God is excusable, as if a house falls in consequence of a tempest. But if the destruction of the house by an unseemly heap has been owing to its being out of repair, the tenant is guilty of waste; and so he will be if he do not repair a house which has been uncovered or damaged only by tempest. In the same manner, if the banks of a river, while in a state of nature, are also destroyed, in order to the preservation of the tenant is not answerable. (1 Inst., 53 a.) But in these and all similar cases, it will still be bound to repair or rebuild, if he have entered into a general covenant to repair. (Tenant and Landlord.)

Tenants in tail, as they have estates of inheritance, are entitled to commit every kind of waste; but this power continues and can be exercised only during the life of the tenant in tail. Thus if trees growing on the land, and sold by the tenant in tail, are not cut during the life of the vendor, they will descend as part of the inheritance. So tenants in tail after possibility of issue extinct, are not imprisoned for waste, but tenants for life when the estates are given without imprisonment of waste, may be restrained from wilfully destroying the estate. (2 Cha. Ga., 32.) A mortgagee in fee in possession has a right at law to bring an action of waste, being then considered as the absolute owner of the inheritance, but the waste may be restrained by a court of equity, which will direct an account of timber cut down, and order it to be applied in reduction of the mortgage debt. (2 Vern., 392.) Tenants in tail for life, tenants in remainder for life, like any other tenants for life, prohibited from committing any kind of waste. Copyholders also cannot, unless there be a special custom to warrant it, commit any kind of waste, and every species of waste not warranted by the custom of the manor or by statute as a form of waste. (5 of Ray. Ch.)

Bishops, rectors, parsons, vicars, and other ecclesiastical persons, being considered in most respects as tenants for life of the lands which they hold in right of the church, are disabled from committing any kind of waste.

The original remedy for waste was that under the statute of Marlbridge, 52 Hen. III., c. 24, which gave to the owner of the inheritance an action of waste against the tenant for life, in which he was entitled to recover full damages for the waste committed. But as this remedy was often found inadequate, it was enacted by the statute of Gloucester, 5 Edw. I., c. 5, that the place wasted should be recovered, together with treble damages for the injury done to the inheritance. No person was entitled to an action of waste against a tenant for life under these statutes, except him who had the estate of inheritance immediately expectant on the determination of the estate for life; so that if there were an unsatisfied debt, or trust of rents, then the tenant for life, and that of inheritance, the right of action was suspended. (1 Inst., 53 b.) The action of waste had long been given way to the more expeditious and easy remedy by an action of trespass on the case in the nature of waste, which may be brought by the person inremainder for life or for years, as well as in fee, and in which the plaintiff is entitled to costs, which he could not have in an action of waste (2 Sound., 252, 7); and the writ of waste as a common law action in the administration of the estate.

The remedy for waste on the death of the tenant, if the estate of the tenant was benefited by the injury inflicted, as if money was derived to it from the sale of timber cut down, it being considered as a detriment to that course of husbandry, which might have been sustained against the executor. (Cope, 37.) Now however, by the 3 and 4 Wm. IV., c. 42, s. 2, remedies by action of trespass or trespass on the case are given against the executors of any deceased person for any cause committed in his name or for the benefit of his estate, or personal property of another within six months of his death, provided the action be brought within six months after the personal representatives have taken upon themselves the administration of the estate. But in the cases of waste that arise after the death of the tenant, if cases of waste is that in the Court of Chancery, which, upon application to it by bill, will not only direct an account to be taken and satisfaction to be made for the damage done, but will interfere by mandamus to restrain the continuance of the waste or future waste. The Court of Equity will grant its assistance against the commission of waste wherever the case appears to require it, and though the plaintiff is not in a condition to maintain an action at law. (3 Atk., 91, 211.) Thus when the tenant trusted to the tenants in remainder, the Court of Chancery will not allow waste to be committed by collusion between the tenant for life and the owner of the next vested estate of inheritance, to the prejudice of persons not in esse; and where the tenant for life in remainder is an infant, then the Court will intervene for the preservation of the inheritance, subject to contingent remainder in tail, the court has interfered to prevent him from committing waste to the prejudice of intermediate contingent remainder-men. (Cruise, Dig., tit. 2, c. 7.) On the other hand, where the tenant in possession has ceased to have an interest in the court, or if it appears that it would be beneficial to the persons entitled to the inheritance to cut down timber on the land, the court sometimes directs it to be done. (Timber and Timber-Trees.) It will also grant an injunction against waste pendant life; and in such cases it is not necessary that the plaintiff should wait till waste is actually committed; it is sufficient if an intention to commit waste appears, or if the defendant insists upon his right to do so. (2 Atk., 648.)

It has long been usual when estates for life are expressly limited, to insert a clause declaring that the tenant shall hold the lands without imprisonment of waste. These words were originally intended merely to exempt the tenant from the imprisonment of waste for cutting down timber; but it has long been settled that they enable him to cut down timber and to convert it to his own use. The powers of the tenant for life under this clause are, however, so far restrained in equity, that he is not allowed to commit malicious waste, but he may cut down trees for necessary timber serving for shelter or ornament to a mansion-house, nor timber unfit to be felled. (2 Vern. 738; 3 Atk. 215.) This is what is called the doctrine of Equitable Waste. But in those cases the court will not give satisfaction to the remainder-man for timber already cut down. (2 Atk., 745.) The privilege of the tenant for life under the words without imprisonment of waste are annexed in privity to his estate, and determine with it. Thus it seems that if a lease was made to one for the life of another without im-
of waste, with remainder to him for his own life, he would become punishable for waste, the first estate being merged in the second. (11 Rep., 83, b.) Some cases which have arisen where partial powers to commit waste had been given, are treated by the court upon the same principles as those in which the estates were given generally without impeachment of waste.

It has been stated that ecclesiastical persons, being considered in the light of tenants for life, are disabled from committing waste, though, like them, they have the right to take from the land materials for necessary repairs. They may not only fell timber and dig stones for that purpose, but have even been allowed to sell timber or stone, when the money was to be applied in repairs; also, though they cannot open mines, they may work those already opened. (Amb., 176.) By the statute 35 Edw. I. it is declared that persons shall not presume to fell trees growing in the churchyard, but when the chancel or body of the church requires reparations; and it is said by Coke that dilapidations of ecclesiastical places, houses, and buildings are a great cause of deprivation (3 Inst., 204.) Ecclesiastical persons may be proceeded against for waste in the civil as well as ecclesiastical courts. It has been held that an action on the case will lie against them for dilapidations, and may be brought by the successor to a benefice either against his predecessor or his personal representatives. (3 Lev. 206; 2 T. R. 630.) It seems doubtful whether the courts of common law have any power to issue a prohibition against the commission of waste by ecclesiastical persons. (1 Bos. and Pull. 105.) But there is no doubt as to the jurisdiction of the Court of Chancery to grant an injunction against any ecclesiastical person whatsoever to stay waste in cutting down timber, pulling down houses, or opening quarries or mines on the glebe. The proper person to make the application is the patron of the living, or, when the living is in the crown, or the application is made against a bishop or a dean and chapter, the attorney-general on behalf of the crown. (3 Mer. 421.) The patron of the living in such cases has no right to press his interest, for he cannot have any profit by the living. (Amb., 176.) An injunction has been granted against waste by the widow of a rector during the vacancy of the living. (2 Bro. c. 5, 62.) By the 56 Geo. III., c. 52, the incumbents of benefices are enabled to cut down timber, the glebe-lands for the purposes of the statute (55 Geo. III.) enabling them to exchange their parsonage-houses or glebe-lands.

(See Bacon's 'Abridgement,'art. Waste.)

WASTE LAND. [Barren Land.]

WAT TYLER. [Richard II.]

WAT. [Horology.]

WATCH. REPEATING, or REPEATER, a term applied to those watches which, in addition to showing the time on the dial, are supplied with mechanism by putting which in action the wearer is enabled at any time to ascertain the time within certain limits. In the article Horology, under the description of an eight-day spring-clock, we have shown how the number of blows given by the hammer to the bell are made to correspond with the hour denoted by the hand of the clock, and we have also shown that by pulling a string the clock would at any time repeat the hour last struck; but this would not be the case where a minute-hand had approached within about two minutes of 60, or 12 o'clock, for from that time till the hand comes to 60 the clock is on the warning, and, as will be seen by referring to the plate, is in such a position that it cannot strike at all. This defect is remedied in clocks and watches on the principle of the repeater. It now remains to show the mechanism of a repeating-watch, which, in the common acceptance of the term, means a watch which is capable of striking either on a bell or other substance the hours and quarters; but there are other repeaters which strike the minutes, and these by way of distinction are called minute-repeaters. It must here be borne in mind that those wheels and pinions which are placed between the frame-plates of a watch constitute what is called the going-train. That collection of wheels and pinions which is placed outside the frame-plates, and generally under the dial in a common watch, serves the purpose of communicating the motion from the centre wheel to the hands or pointers, and is called the motion-work. These wheels and pinions contain such numbers as will cause each hand or index to revolve in its proper place. A repeating motion in addition to the foregoing compre-

hends all those parts necessary to transmit the motion from the last-named train of wheels to the hammer, which are to strike the hours and quarters. In a repeater there is an additional train of wheels between the frame-plates, called the running or globe-wheel-work; sometimes it is called the repeating train. This train of wheels serves the purpose of regulating the rapidity with which the successive blows shall be given to the bell or other substance on which the watch strikes, and consists generally of five wheels and five pinions a, b, c, d, e, f (Fig. 1); the last pinion in the train, performing the office of a fly-wheel, is generally called the fly-pinion, and when the striking is regulated to its ordinary rate makes about 200 revolutions to each blow of the hammer.

In the following description Fig. 1 represents the repeating-train between the frame; and Fig. 2, the under side of the same frame-plate, on which the motion-work is planted.

Fig. 2.

The arbor of the first wheel, a, Fig. 1, of the repeating-train, has in it a hook which takes hold of the inner end of the repeating main-spring, the outer end of which is secured to the side of a barrel, which is fixed immovably to the upper frame-plate, which is removed to afford a view of the wheel-work; the arbor is also attached moveably to another wheel called the ratchet, R, under which is
attached to it a smaller ratchet, into the teeth of which a click is forced by a spring. The click and spring being fixed to the wheel a, so that when the arbor is turned (by the repeating-motion-work) in the direction to wind up the spring, the ratchet R turns without the wheel a, but in its effort to get back to its original position it brings the wheel a with it, and consequently gives motion to the whole of the repeating-train and also to the motion-work. In the return the teeth of the ratchet R catch m, a small moveable raising piece forming the tail of the hammer H, and cause it to strike. A spring attached to the upper frame-plate acts on the pins of the tail m, and forces the tail a little way out of the hold of the tooth of the ratchet, and to this motion in the opposite position to be acted upon by the ratchet-teeth, and at the same time allows of a sufficient motion in the contrary direction, to allow the ratchet-teeth to pass the tail during the backward motion, or which the key is being turned.

No. 2 represents the repeating-motion-work which is outside the frames, and under the dial, the dial being removed to show the work. P is the pendant-shank or push-piece, passing through the socket or pipe O. On the end of P is a pin a, fixed flat on the under side, which flat part slides against a piece of steel screwed to the inside of the case, and serves to keep the pendant from turning round, and the end of the piece of p or pins is formed with a small projecting rim or bead, which prevents the key from turning out of the key hole. Then, when the motion of the pusher, when forced in, acts on the rounded end or heel A of the lever C, whose centre of motion is the screw C, and attached to its other extremity is one end of a chain s*, which passes round a pulley B, on a stud fixed in the motion-work, and comes out of the case through one of the numbers of another pulley, A, which is fixed on the squared end of the arbor of the ratchet R, No. 1, to which the first wheel a of the repeating-train is attached as before described, and which is the ratchet of the push-piece. A and with it the ratchet R are made to revolve, and wind up the spring which is to put the repeating-train in motion; and the arm b of the lever C limits the distance to which C can be pushed, by coming in contact with the teeth of the hammer, and causes the number of ratchet-teeth in R, Fig. 1, which are to pass the hammer-tail or raising-piece m, in order that on their return, by the reaction of the spring, they may cause the hammer to strike the required number of blows.

As, 1, 2, 3, represent the steps in the quarter-repetition, Fig. 2, which is attached immovably to the cannon-pinion D, which latter carries the minute-hand and is fixed spring-tight on to the prolonged arbor of the centre-wheel (which is used for an hour).

Attached to the quarter-repetition N is the surprise which has a motion concentric with the cannon-pinion and extremity of the quarter-repetition: into the surprise Z is put a pin o, one end of which serves to limit the motion of the surprise Z by passing through a slit in the snail N, and the other end serves to shift the hour-hand L, by acting on the teeth of the star-wheel; and as soon as the pin o has shifted the star so far as to bring one of the points just past the angular point of the jumper s, the star-wheel and surprise Z are thrown suddenly forward by the jumper, and made to assume the position shown in the drawing, by the succeeding tooth to the one which has been acted upon by the pin o coming in contact with the back of the pin o. The surprise Z is moved only so far as to occur exactly as the minute-hand comes to the hour, and the use of the surprise is to receive the end of the arm b, which would otherwise be likely to come on the edge of the snail, and make the hammer fall on step without the push-piece was thrust in. When the minute-hand was at the hour, or 00, on the dial; by this contrivance the change from hour to hour is made instantaneously.

Q is the quarter-rack, whose centre of motion is Q, having the same form and proportions as F and G, and its purpose is striking double blows for the quarters, for which purpose there is another hammer N, seen in No. 1, called the quarter-hammer. K is a piece fitted on over the pulley A to the square end of the arbor of the first wheel a, Fig. 1, of the repeating-train, and serves to bring back the quarter-rack, Fig. 2, to its original place by acting on the pin G by that part of it which is formed by a straight line through the centre of A, and which does not take hold of the pin G until all the blows of the hammer denoted by the hour-hand and determined by the hour-snail have been given.

It will easily be seen how by the action of this pin K on the pin G, which is the same length and made to act in rapid succession on the two pieces q and g, which are attached to the prolonged axes of the hour and quarter-hammers, and are acted on by springs 9 and 10, so as to allow the teeth of the quarter-rack to pass the quarter-repetition, which latter determines the number of quarters to be struck, according as the rack falls on the steps 1, 2, and 3, into which positions the rack is thrown by a spring D. When the arm a by acting on G brings back the quarter-rack to the position of the second movement, with the nothing piece TR, giving it, together with the star-wheel, a small degree of motion concentric to T, the quantity of motion being limited by a stud fixed in the frame-plate, and passing through a small opening or hole in TR at z, in which the arm is kept in its position by a spring i, fixed on TR acting against the stud in the plate. The hour-hammer has in it a pin, 3, coming up through an opening, 3, in the plate; the spring r acts on this pin, and causes the hammer to strike; it has also another pin, 2, coming through the case, and retaining the pin 3, as already mentioned, in the quarters; the quarter-hammer has a similar pin coming through opening 4, on which spring 7 presses for a similar purpose.

When the quarter-rack is brought back to its original position, namely, that which it had before the motion of the key, it is carried to the opposite end of the quarter-repetition, which was brought beyond the end of R of the all-or-nothing, which in its passage m will have pressed outwards: when m has passed the end R, TR is brought back to its place by i, z, and prevents the motion of the quarter-repetition, and the quarter-rack, which, when the rack is brought home, acts upon the raising piece or tail m (No. 1), through the medium of the pin I, which is fixed in it, and turns it into such a position that it shall not engage with the teeth in the ratchet R, which serves the important purpose of preventing any blow from being struck unless the push-piece is pushed quite home, so that the arm b comes in contact with the hour-hand L, and gives motion to the all-or-nothing T R, which, by releasing the quarter-rack, sets it in motion by the spring i, and allows the raising-piece in No. 1 to take the proper position for engaging with the teeth in the ratchet R (No. 1): 12 is a stud to carry the minute-wheel, which, as well as the hour-wheel, is omitted to prevent confusion. It may be remarked that, when the key is turned, the presence of the quarter-snail which is marked h is in such a position as to receive the end of the quarter-rack upon it, the hour only can be struck, as it does not admit of sufficient motion to bring the hammer N into position, nor does it allow of the minute-hand, when the surprise flies forward, and, should the watch be struck immediately, would receive the end of the quarter-rack, and prevent any more than the hour being struck.

WATCH AND WARD is the ancient provision for the maintenance of the public peace and of property in towns: watch is related to the night, word to the day. The duty of keeping watch and ward no doubt prevailed in Anglo-Saxon times, although it is usually stated to have been imposed by the statute of 1160 (c. 4). The words of the statute are — And henceforth it is commanded that watches be made as formerly they were accustomed to be; that is to say, from Ascension-day to Whit-day in every parish, by the churchwardens of every church, or by four men, according to the number of inhabitants; and that they watch all the night from sunset to sunrise. And if any stranger pass by them, he shall be arrested.
The duty of keeping watch is imposed upon every inhabitant of the group, which is essentially a small community. The watchman must be suitably armed, and women or infirm persons must find substitutes. Not to keep watch in his turn, or not to find a sufficient substitute, is an offence for which the party may be indicted at the sessions of the petty court. It is also punishable by fine and imprisonment.

Another class of watchmen, having like powers and duties to the former, is that appointed by the justices for the preservation of the peace. [Constables.]

WATCHE. [Somersetshire.]

WATCHEO. [SOMERSETSHIRE.] WATCHEO is said to be the largest island of a small group situated in the Pacific between the two larger groups of the Society Islands on the east and the Friendly Islands on the west. It is a small island, with a circumference of about 18 miles. The surface is composed of hills and plains, and the soil is light and sandy along the beach, but better farther inland. The shores are lined with reefs or rocks, which extend to distances that are not easily obtained in some parts. As the island is very low, and has steep walls, so that it cannot be approached by vessels. It has abundance of cocoa-palms, bread-fruit, plantains, and sweet potatoes; and of animals, especially hogs. A great part of it is covered with trees. The number of inhabitants is perhaps about 4000, and that of the women is estimated at 16,000. They resemble in size, colour, and form the inhabitants of the Society Islands, and their language does not differ much from that of the neighbouring groups. The island was discovered in 1757 by the French navigator, Captain James Cook. He spent some time there, and when he left, the island was in the hands of the missionaries, about twelve years ago, went there from the Society Islands. It is stated that since then they have advanced considerably in civilization. (Cook's Third Voyage: Missionary Report.)

WATER. [W. And J. ROBINS, ENRRI, receveur-general des finances, was born at Paris in 1718. Watelet was distinguished as one of the best French critical writers upon art and was also an excellent amateur painter and copper-plate etcher. He was the son of Henri Watelet, receveur-général des finances de l'Orleáns, and was educated at the college of Harcourt. He visited Germany and Italy in his youth, and spent some time at Rome, where he formed a friendship with the French painter Pierre, and became one of the pupils of the French school at Rome. He then returned to France, and entered the army. When the society in Paris, he retired to the country-side of Moulinjoli, belonging to Madame Le Comte. Here he wrote his didactic poem, 'L'Art de Peindre,' which was published in 1761. In the same year he was elected a member of the French Academy, and near the same time, the first part of a work entitled 'De l'Origine et de la Destination des Arts Libéraux,' the second part was never published. After this time he paid a second visit to Italy, in company with his friend M. de Silvole, and Abbé Beclere, having previously visited Holland and Belgium. He was everywhere well received on his journey, and was much noticed by the king of Sardinia and the pope Rezzonico, Clement XIII. He was made member of the academy of the Sciences of the arts; and in 1774, he was elected a member of the Institute of Belles Lettres. After his return to France a second time, he published, in 1774, his 'Essai sur les Jardins,' and in 1784 was published a 'Recueil de quelques Ouvrages de M. Watelet.' This collection contains several dramas, some of which have been acted. He died in 1760, leaving a son who spent a long quiet sleep. His eloge was read a few days after his death, at a public solennity of the French Academy of Medicine, by M. Vicq D'Azay, the secretary of the Society, of which Watelet was an associé libre. He was also an honorary member of the French royal academy of painting and architecture, and a member of the academy of Berlin.

The chief work of Watelet's life was his 'Dictionary of the Arts of Painting, Sculpture, and Engraving,' which was not published until after his death—Dictionnaire des Beaux-Arts, translated from the French by W. and J. Robins, published in Paris, 1792. Watelet left the work incomplete, and it was finished by M. Levesque, of the French Academy of Inscriptions and Belles-Lettres. Watelet etched many plates: Huber, in his 'Manuel des Artistes,' &c., etched more than 27 portraits in 48 plates. A cubit inch of water at 62° Fahr., and 30 inches barometric pressure, weighs 222-456 grains, and as a cubic inch of atmospheric air weighs 0-91 grains, it is rather more than 815 times heavier than an equal volume of air.

Water, like all other fluids and substances, expands by exposure to an increase of temperature, and, with a curious exception, the dilatation within certain limits is proportionate to the degree of heat to which it is subjected. It is a very important property; for if water were less than a point more dense than exactly at its freezing point, it would be less dense than exactly at its boiling point: for example, if water at 40°, which is the point of its greatest density, be cooled, it expands as it cools till reduced to 32°, when it solidifies, and this constitutes the exception to the law of its expansion by reduction of temperature: if, on the other hand, it be heated, it expands as the temperature rises, and this is conformable to the general law. This expansion of water by cold produces very important effects in the economy of nature; for if it increased in density, the frozen portions would sink down successively, and thus large bodies of water would become masses of solid ice.

When water is heated to a certain point, which is arbitrarily fixed on the scale of Fahrenheit's thermometer at 212°, it acquires the greatest temperature which it can possibly possess, it then boils, and is converted into vapour. A little before ebullition commences a slight noise is heard, which is commonly called simmering; this arises from the formation of small bubbles of vapour or steam at the bottom of the vessel, which, as they ascend, break into the upper and colder portion of the water; in this they are condensed, and the noise results from the sudden condensation of the bubbles of vapour.

Steam at 212° occupies about 1700 times as much space as the water does at 32°, which is the temperature at which it is generated. It is upon the elastic force of steam communicated by heat, and the instantaneous annihilation of it by cold, that the working of the steam-engine depends. Though we can calculate with the average atmospheric pressure, and acquire no higher degree of temperature than 212°, when heated under pressure it acquires a much higher degree of heat; and it is a curious fact that the steam issuing from what we
tended a high-pressure boiler does not scald when water is received on the hand; which is probable, not that it is capable of two causes; first, the conversion of the steam with cold air; and secondly, to be kept perfectly still, it may be reduced below this temperature and yet retain its fluidity, but by agitation solidification ensues, and the temperature rises to 32°. The force with which water assumes the solid state is so great, that iron vessels of great thickness have been found, and glass vessels of lead, pipes are laid, known to be destroyed in winter time from the same cause. Ice is lighter than water, its density being 0:94, and hence it floats on water. The subject of the discovery of the composition of water has lately excited considerable discussion; for we are generally convinced that the claim of Mr. Cavendish as the author of this great discovery, and which has been for some years assigned to him without dispute, is rightly so attri-

WATER. Several of the uses of water having been already stated, either under the article Bathing or that of Foon, it is intended to treat here of what may be termed the natural history of water, both simple and mineral, embracing also an account of the several classes of water, especially of such as suffer from contamination.

Water is commonly divided into certain heads, according to the source whence it is obtained, viz. into atmospheric water, including rain and dew; and into terrestrial water, comprising spring, river, well, lake, marsh, and sea. Looking at it from the last point of view, water, being the order now given will afford convenient opportunities of stating the peculiarities of each, after some general statements of the properties common to all. Pure water is a colourless, transparent, tasteless, and odourless compound, at the ordinary temperature of 32° F. (except near the poles and the summits of lofty mountains), having neither an acid nor alkaline reaction, and being assumed as the standard, of the specific gravity 1.000. It is seldom found in a state of perfect purity, but, from its great solvents and absorbent power, it is in-pregnated with a variety of saline substances, gases, and animal and vegetable substances, either living or undergoing a process of decomposition. The effect of these is to communicate different properties, and generally give it a peculiar taste, and not unfrequently an odour, which, if not cognizable by the blunted senses of man, is so by animals, especially the camel, which can scent water at a great distance in the desert. The specific gravity of land water is often modified by the saline nature of the soil, especially that of certain springs and of the great rivers, from the quantity of mud and other matters which they contain.

Rain-water is commonly reckoned the purest; but it is by no means free from accidental impregnations as is generally supposed. Whatever foreign ingredients exist in the atmosphere of any place are brought to the ground by the first rain that falls;—thus, it often contains traces of munitions, of free muriatic acid, nitric acid, carbonic acid, and of carburetted hydrogen gases; minute quantities of iron, nickel, and manganese; as well as of a peculiar organic substance, chemically different from the extractive matter and the gluten of plants and animals, called pyrrhyte. (Dubeny, Report, p. 1.) Occasionally phosporylic acid is found in it, especially when the wind blows from the north-west. Much more important is the presence of ammonia, insisted on by Liebig (Chemistry in its Application to Agriculture, p. 75, 2nd edit.) as the chief source of the nitrogen of plants. Rain-water has high solvent powers, which fit it well for the part it has to perform in the economy of nature, and also for many operations in the laboratory. In this respect it is nearly equal to distilled water. When collected in the natural reservoirs of towns it is often kept strained; and is always contaminated with some soluble and generally dangerous salt of lead, when collected from leaden-roofs or transmitted through leaden pipes or cisterns.

LADD. This differs little from rain, save in containing more atmospheric air. [Dew.] Ice-water differs, when first obtained, from rain, in being destitute of atmospheric air, and hence it cannot sustain respiration in fishes; it is for the same reason marshy and insipid; but by exposure to the air it speedily absorbs a due proportion. Snow-water is near similarly. It is said, that, or being exposed to the air, in being destitute of atmospheric air, and hence it cannot sustain respiration in fishes; it is for the same reason marshy and insipid; but by exposure to the air it speedily absorbs a due proportion. Snow-water is near similarly. It is said, that, or being exposed to the air, it speedily absorbs a due proportion.
apt to become so if kept in a reservoir lined with bricks, unless they be coated with an insoluble cement. The water from old wells is more pure than from recent ones, the soluble particles having all gradually washed away. The pump and well water, if pure or putrid, may be rendered pure by adding alum or recently prepared charcoal, or by simply pouring it from one vessel to another in the sun.

Water of the ocean abounds in saline matters so much, that it is unfit for use, except in small quantity as a medicine. The quantity of salt in this water is uniform, while the water of the Southern ocean contains more salt than the Northern, while the proportion present in the water at the equator holds the middle place between the two. This sea water may be made fit for drinking by pressure, filtration, and freezing, or simply by boiling it, and condensing the steam as it arises.

Distilled Water.—For many chemical, pharmaceutical, and even dietetical purposes, water must be of greater purity than it is generally found. For this end, it is usually to be distilled, in which process never more than two-thirds of the water put into the still should be allowed to pass over.

Boiled Water.—This is water boiled and poured on toasted bread, which in some degree lessens the rapid taste. An agreeable and beneficial degree of salinity may be communicated to water which has been long boiled, by adding, previous to drinking it, a little of the common soda-water, which is merely carbonic acid gas diffused through the water under some pressure.

Mineral Waters.—Dr. Gairdner, in his Natural History of Mineral and Thermal Springs, has endeavoured to generalize the connection between the composition of mineral waters and the rock formations from which they flow:

1. The salts held in solution in mineral waters have often no connection with the acid, saline, or earthy matters which enter into the composition of the rocks which are supposed to be the source of the waters, but which seems to be the first index that such waters cannot derive their origin from these formations.

2. The mineral waters of the primitive formations are almost all thermal, and generally possess a very high temperature. Their predominant impregnation is usually sulphurated hydrogen gas, free carbonic acid gas, carbonate of soda, and in general salts with a base of soda, silica, few calcarious salts, except the carbonate of lime in some peculiar situations, and but a small quantity of iron.

3. The waters of the transition and older secondary formations participate in those belonging to the primitive rocks. They are generally of a lower temperature, though they may be very hot; free carbonic acid is much less common, and sulphurated hydrogen is almost entirely absent. Salts of soda still predominate, but the carbonate is not so common, and the sulphate of lime is found in the greater number of these waters. Silica exists in two or three examples.

4. The waters of the newer secondary and tertiary formations are as distinctly characterized as those of the primitive rocks, placed at the other extremity of the series. They are all cold. Free carbonic acid is almost entirely absent. Their predominant ingredients are the carbonate and sulphate of lime, sulphate of magnesia, and oxide of iron.

5. The trachytic and basaltic formations, and modern volcanic rocks, present in their mineral waters marks only in a few spots and in the cases in which they are found in the waters of the granite and other primitive rocks. Sulphurated hydrogen, carbonic acid, carbonate of soda, carbonate of lime, and silice repassar, and many other substances and minerals which the temper of the water is aquatic.

6. It is often found that the mineral waters of a district have almost the same composition, in which case they generally issue from the crystalline and independent formations. In other cases they are subject to great variations, and depend on a comparison of a totally different composition rise close to each other, when they emerge from sedimentary rocks.
Mineral waters, though generally characterized by possessing some principle different from what is found in common water, or some of the ordinary principles in usual proportion, yet among these are reckoned certain springs which have no claim to distinction beyond their character to their extreme purity, such as Malvern and Holywell; or to having a higher temperature throughout the year, than the mean of the latitude where they are situated. There are others, among other springs, which are properly divided into two sections, the mineralized hot springs and the unmineralized, among which are some only tepid, such as Matlock, where some springs are 69°, the lowest of the class in Britain, and others cold, presenting an elevation of the temperature, to thirty yards above the level of the river Derwent, whilst those which arise either above or below this range cold. For practical purposes mineral-waters may be classed under four heads, each susceptible of secondary heads, according as they are hot or cold, or have other peculiarities, viz.: saline, alkaline, chalybeate, and sulphureous. It will not be possible to mention more than a few of the most important of each.

Hot or aperture springs: of these some are hot, others cold. The chief are Carlsbad, Marienbad, Egra, Kissingen, Wiesbaden, Baden-Baden, Seidlitz, and Saidschuft, with Pullna, in Germany; Cheltenham, Leamington, and Harrogate in England; Dunblane, Pitcaithly, and others in Scotland.

Alkaline waters, owing their properties to different saline principles, are found at Carlsbad, Marienbad, Kissingen, Pullna, Saidschuft, Ema, Töplitz, and Wiesbaden, in Germany; Vichy and Mont d'Or, in France; Harrogate, Scarborough, and other Yorkshire springs, Cheltenham, Leamington, Bath, and elsewhere, in England.

Chalybeate waters: with these acridulous waters are often reckoned, as the iron is often associated with much free carbonic acid gas. Some of the chief are Spa, Pyrmont, Jermyn's Wells, Marienbad, Ask-la-Chapelle, and Selzter in Germany; Tonbridge, Harrogate, and Brighton, in England, and Peterhead, in Scotland.

Sulphureous waters: Aix-la-Chapelle, in Rhine Prussia, Burgsee, clean springs, are hot; Harrogate, Ask-la-Chapelle, and others in Yorkshire, cold; Moffat and Strathpeffer, in Scotland, also cold.

Joduretted and other waters. Many springs have of late been found to contain a notable quantity of iodine or bromine, others contain both; Creuzach, in Germany, contains both, but most iodine; Llandrindod and Builid in Radnorshire, the springs issuing from the lias at Leamington, Gloucester, Tewkesbury, and Cheltenham, contain iodine; bromine, but not iodine, exists in small quantity, in the same water near London, in the springs from the coal-formation of Asby-de-la-Zouch, Newcastle-on-Tyne, and Kingswood, and Bannning near Edinburgh: Woodhall, near Asby-de-la-Zouch, contains most iodine of any British springs yet investigated.

Organic matters, termed Boregine, glairine, zoogene, &c., have been found in many springs. Of these an account may be found in Dr. Lankester's Aeshern and its mineral springs, p. 103.


WATER LAND AND TITLES. The right of conducting water through a estate for the use of the other is an incorporeal hereditament of the class of easements, and was known in the Roman law by the name of the servitium aquae ductus. The right of taking water out of the well or pond belonging to another person is an incorporeal hereditament of the class of profits called in the civil law the servitium aquae haustus. (Domat, Civil Law, 1. 1, t. 12.) These rights, in our law, must be either derived from a grant or established by prescription. [Prescrip-] It is the settled law of England that water flowing in a stream is originally publici juris, that is to say, a thing the property of which belongs to no individual, but the use to all. Prima factae the proprietor of each bank of a stream is the proprietor of one half of the land covered by the stream, but there is no propriety in the water. Every proprietor has an equal right to use the water which flows in the stream, and consequently no one can have the right to use the water to the prejudice of any other without his consent. No proprietor can either diminish the quantity of water flowing over his land, or altogether prevent the water passing from his estate, nor throw back the water upon the proprietors above, so as to overflow or injure their lands. For the same reason no proprietor has a right so to use the water of a stream as to injure its quality to the detriment of other proprietors.

The only modes in which a right to the use of running water in a manner inconsistent with the common law rights of others can be established, are either proof of an actual grant or licence from the persons whose rights are interfered with, or proof of an uninterrupted enjoyment of such a privilege for such a period as the law considers sufficient to constitute a right by prescription. The period of twenty years had been generally fixed upon by the courts of law and equity for this purpose, and the Act 3 Will. IV. c. 71, which substituted a period of thirty years, was adopted in the late Prescription Act (2 & 3 Wm. IV., c. 71, s. 2), which converts what was formerly only a prescriptive into an actual right. [Prescription.] But where water had been left unappropriated, it seems that the person first taking the water, after appropriating it, and rendering to the owner for a violation of such right an action may be maintained on an enjoyment of less than twenty years. Thus it has been decided that after the erection of works and the appropriation by the owner of the land of a certain quantity of the running water, if the water runs over, and takes what remains of the water before unappropriated, the first-mentioned owner, however he might before such second appropriation have taken to himself so much more, cannot do so afterwards. (6 East, 219.) The privilege of taking water from the second owner, after the period of twenty years, was held to be a nuisance, and may be continued in a corporation or, may be prescribed for by the inhabitants of a township or parish. If land with a run of water upon it be sold, the water privas factae passes with the land; but if the land be taken in fee simple by an owner as aquam eam, the soil will not pass, but only a right of fishing in that water; for the proper words in that case to pass the soil would be, so many acres of land aquae cooperias; whereas the word stagnum, or pool, will pass both water and land. (1 Inst. 43.) The exclusive right to a flow of water once acquired can only pass by grant as an incorporeal hereditament, and a licence, by parol or otherwise, to use or take the water at any place, may be revoked even without an express power of revocation by the grantor or licensor, unless works have been constructed and expenses incurred upon the faith of it. (5 B. & Ad., 1.)

When the owners of property have by long enjoyment acquired special rights to the use of water in its natural state as it was accustomed to flow, by way of pasturage or easement to their own properties, and not merely as a use, which is common to all the king's subjects, an action may be maintained for a disturbance of the enjoyment; but where the injury, if any, is to all the king's subjects, the only remedy is by indictment. The mere obstruction of the flow of water which has been accustomed to flow through a person's lands does not in itself afford a ground of action. The plaintiff in such an action must be enabled to show that the water is the same water which was going through his lands, of which he has been deprived, or at least that some deterioration was occasioned to the premises by the subtraction of the water; but where the proprietor of the lands can prove that he was not required to pay the diversion the defendant is entitled to his action to show that the defendant was the first person who appropriated the water to his own use, unless he has had twenty years' undisturbed enjoyment of it in its altered course. Where the injury occasioned by the diversion or obstruction of water is of a permanent nature, and has caused the reversion, an action may be brought by the reversioner, as well as by the tenant in possession, each for his respective loss.

The diversion of watercourses or injury to their banks so as to cause inundation is nuisances against which a court of equity will protect parties by injunction; and if there be a question as to the right to the flow of water, an issue
will be directed to try it. Although a court of equity will not in terms decree the banks of rivers, watercourses, or navigable canals to be repaired, the effect of such an order may be obtained by an order that parties shall not be at liberty to use the said bank, or the said watercourse, or against their using the same by the obstructions consequent upon a state of disrepair. An injunction may also be obtained against conducting water from one man's tenement to that of another, to the injury of the latter, by directions to watercourses, being put in abeyance for the purpose of preventing the wet plaster, require simply water (distilled or boiled) as a vehicle; the lime itself, as it dries, binds them. The mixture of lime and sand for the intonaco, or fine and last coat for painting upon, must be prepared and kept moist some months before it is used, or otherwise it degrades the water-colours. The following interesting details relating to the practice of fresco-painting, both of the old Italian and the modern German masters, the reader is referred to the Appendix to the Report of the Commission on the Fine Arts, presented to both Houses of Parliament by command of Her Majesty, in 1842. All pigments, as those prepared from animal and vegetable substances, cannot be used in fresco-painting on account of the lime in the ground, which destroys them; yet some can be used, and are prepared for this purpose; or, a substitute is made for them, and a suitable colour for every purpose. The following are the colours used by Professor Hess, the eminent German fresco-painter: white—lime which has either been long kept or rendered less caustic by repeated manipulations and dry-well; yellow—reddish earth; and yellow ochres, burnt ochres, burnt sienna, oxides of iron and lake-coloured burnt violets: green—terra-vert, cobalt green, and chrome green: blue—ultramarine, pure and factitious, and cobalt: brown—burnt and raw umber and burnt terracotta: purple—but violet, cobalt, and raw ultramarine. The following are the most permanent colours, and therefore most valuable to the water-colour painter: blues—ultramarine, French ultramarine, cobalt, indigo, and small: greens—Indian red, light red, Venetian red, scarlet vermilion, carmine, pink, and vermilion; maroon, purple lake, and red ornament: yellows—cadmium yellow, gamboge, yellow ochre, Indian yellow, mars yellow, lemon yellow, Roman ochre, brown ochre, mars orange, raw sienna, Italian yellow, gamboge, and gamboge; burnt sienna, Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greens—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: brown, pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown: greys—emerald green, olive green, and green oxide of chromium: reds—alizarin crimson, and ivory black, and yellow; violet—Indian purple, and burnt carmine: browns—burnt sienna, brown pink, burnt umber, Van Dyck brown, sepia, maroon, Cologne earth, bistre, and madder brown.
the use of their holy water from this ancient custom; but Du Fresne seems to speak more properly when he says their lustral water rather succeeded in its room. Bingham is himself inclined to deduce the modern custom 'from the same source in the church, or at least it is associated with holy water' (properly, sprinkling-vessels), so often spoken of among the heathens; and he quotes a passage from Sozomen, where that ecclesiastical historian, speaking of the emperor Julian's going into a temple in Gaul to sacrifice, with Valentinus attending him, 'saw his priest sprinkled them with water as they went in, according to the heathen custom'; upon which his editor, Henry Valesius, has observed that the reading in some copies is 'according to ecclesiastical custom,' the more modern tradition, and he quotes the passage in the sense. (See also ch. x., § 5.) Holy water is also used in the Greek church, but without salt. The mixture of the salt and water is interpreted by some Roman Catholic divines as that which is called the hyposcarum of the nature of Christ, the salt being the emblem of his divinity, the water of his humanity.

WATER-LILY, the common name of several plants remarkable for their beauty, belonging to different genera of the family Nymphaeaceae. Nymphaea and Nuphar are called Water-Lilies. The genus Nymphaea has a calyx of four sepals girding the base of the torus. The petals, 16 to 28, adnate to the torus, elevated about the ovary and covering the same, and therefore at first sight appearing to be stamens, are united. The stamens are numerous, disposed in many series, and inserted in a similar way above the petals. There are upwards of twenty species of this genus described. They have all large floating leaves, with white, red, or blue flowers, which appear at any season.

N. caerulea, Blue Water-Lily, has peltate nearly entire leaves without dots, glabrous on both surfaces, and 2-lobed at the base, the lobes free; the anther with an appendage at the apex; the stigmas, 10-rayed. This plant is a native of the northern United States, the fresh-water ground of Ohio, Indiana, Ohio, and Tennessee. The flowers are very fragrant, and from its frequent representation in the sculptures of Egypt, it appears to have been regarded as a sacred plant by the antient Egyptians.

N. edulis, the edible Water-Lily, has peltate, broad, oval, entire leaves, with the under surface pubescent. This plant is a native of the East Indies, in wet fenny districts. Its flowers are small, and white or reddish. Like all the species, it has large pinnate roots, which contain an abundance of starch and the rhizomes are used for articles of diet. The seeds also of a species nearly allied to this, the N. rubra, which has deep-red flowers, are also used as an article of diet. Its flowers also are held in superstitious veneration by the Hindus in the districts of the East Indies in which it grows.

N. pubescens has peltate, sharply-toothed leaves, obliquely reniform, with the under surface pubescent and spotted, and the lobes roundish. It is a native of the East Indies, Malacca, the Moluccas, and Borneo. It has been found also at Weere and Aera on the western coast of Africa. This plant is called Lotos throughout India, and is held sacred by the Hindus. Its flowers are of a beautiful white. They expand during the day and close at night, the flowers of the morning being of these, and the roots of the evening. The seeds are large, and very much in use in India for making polishes.

N. Lotus, the Egyptian Lotos, has peltate leaves, sharply serrated; the under surface is pilose at the nerves, and pubescent between them. This plant is a native of Egypt, and grows in slow-running streams, especially in the Nile near Rosetta and Damietta, and has been found also at Weere and Aera on the western coast of Africa. This plant is called Lotos throughout India, and is held sacred by the Hindus. Its flowers are of a beautiful white. They expand during the day and close at night, the flowers of the morning being of these, and the roots of the evening. The seeds are large, and very much in use in India for making polishes.

Lotos. The Lotos of the Egyptians was the Zizyphus Lotos; that of Homer and Dioscorides, a species of Lotos or Trifolium. The Lotos of Hippocrates is the Cetis australis; and the Italian Lotos is the Diospyrus Lotos. L. rubra, the common or Water-Lily, has cordate, quite entire leaves; the stigmas 16-rayed, the rays ascending. This plant is a native of ditches, ponds, and lakes throughout Europe, and is abundant in Great Britain. The flowers are white, and, according to Linnaeus, open them- selves at the close of the morning and close in the morning, opening at about four o'clock in the evening. This plant is very deservedly highly esteemed as the most beautiful of European plants. It is frequently accompanied with the yellow water-lily, and the two together give an exceedingly graceful appearance and a very pleasant smell. The roots of the white water-lily contain an astringent principle, which renders them useful in dyeing. They also contain starch, and on this account swine feed on them, although other animals reject them. The whole plant was at one time regarded as medicinal, but it is now thought to be injurious. It is not only its beauty, although it has a popular reputation as a remedy in many diseases. There is a variety of this plant occasionally met with, called minor, which has smaller flowers and leaves than the species

N. odorata, Sweet-scented Water-Lily, has cordate, quite entire leaves, with the nerves and veins on the under surface very prominent; the stigmas 16 to 20 rayed; the rays erect, inflamed at the top. This plant is a native of North America, from Canada to the Carolinas. It is found in ditches and slow-running rivers. This plant is often confounded with the European Lily, but it is quite distinct. Its flowers are white tinged with red, very fragrant, and opening in the morning, close at night. The roots of this species are also white, and are of the same size. They are the root of the black dyeing plant, which has been used in the manufacture of a black dye. It is called N. pubescens, which is from the same species as the white water-lily, and the black flower is claimed to be a beautiful one.

N. regia. This splendid plant, in the dimensions of its leaves, their colour, the colour, size, and fragrance of its flowers, may be regarded as the queen of flowers. The following is the account of its discovery by Mr. Schomberg:

It was on the 1st of January, while contending with the difficulties nature opposed in different forms to our progress up the river Berbice, that we arrived at a point where the river expanded and formed a currentless basin: some object on the southern extremity of this basin attracted my attention; it was impossible to form any idea what it could
be, and animating the crew to increase the rate of their paddling, we were shortly afterwards opposite the object that had raised my curiosity—a vegetable wonder.

A call for botanists was at once made; and the young frog was, I felt, my reward. I felt as a botanist, and felt myself rewarded—a gigantic leaf, from five to six feet in diameter, salver-shaped, with a broad rim, of a light green above and a vivid crimson below, resting on the water.

Quite in character with the wonderful leaf was the luxuriant growth of many hundred petals, pastel in their alternate tints from pure white to rose and pink. The smooth water was covered with the blossoms, and as I rowed from one to the other, I always observed something new to admire. No specimens of this plant have been yet seen alive in this country, but seeds have been received from Mr. Schonburg, and it is hoped that this splendid plant may yet flourish in our gardens. The leaves are very large, measuring 5 or 6 feet in diameter. They have an orbicular form, the upper surface is bright green, and they are corrugated with a rim round the margin from 3 to 4 inches in height; on the inside the rim has a green colour, and on the outside, like the under surface of the leaf, it is of a bright crimson; they have prominent ribs, which project an inch high, radiating from a common centre; these are crossed by a membrane, giving the whole the appearance of a spider's web; the whole leaf is beset with prickles, and when young is convolute. The stalk of the flower is an inch thick and studded with prickles. The calyx is 4-leaved, each sepal is 7 inches in length and 4 inches broad. The corolla covers the calyx with hundreds of petals; when first opened it is of a white colour, but subsequently changes to pink; it is very fragrant. Like all other water-lilies, its petals and stamens pass into each other, a petal often being found surmounted with half an androecium. The seeds are numerous, and embedded in a spongy substance. This plant has by some botanists been placed in the genus Euryale, whilst Lindley thinks it is nearer Nymphaea, from which it differs in the sepals and petals being distinct, the papilla of the stigma being prolonged into a horn, and the changing colour of its petals. Of this genus there is but one species at present described.

In the cultivation of water-lilies, those brought from warm climates should be grown in large pots or pans of water, with several inches of rich loamy soil in the bottom, which should be placed in a warm part of the stove. The hardy species may be planted in ponds, cisterns, canals, or lakes, with a rich loamy soil at the bottom. They may be propagated by seeds, or dividing their roots or tubers, when placed in the water where they are intended to remain. A due supply of water should be ensured for their growth, as they will not prosper after being exposed to the atmosphere or cold.

(From 'Gardener's Dictionary'; Lindley's 'Monograph on Victoria regia'.)

WATER-MEADOWS. (IRRIGATION.)
WATER-NUT. [Trapa.]
WATER-OAK. [Quercus.]
WATER-OUSSEL. [Cinclus.]

Genera and Species. [Meek.] [Bull. Cl. vol. xv., p. 122.]

The Cinclus haunt the banks of clear streams, rejoicing in the vicinity of some tumbling cascade hurrying over a rocky declivity. They go into the water till they are quite submerged, walk on the bottom of the stream, and seek their insect food. M. Temminck states that when in this situation they open their wings and constantly agitate them. Their feathers are, he says, furnished with an oily matter for this purpose, like the feathers of ducks; and adds, as an on dit, that when thus walking they appear surrounded with air-bubbles, which render them very brilliant.

The following are European:

Cinclus aquaticus, Cinclus melonogaster, and Cinclus Pallasi. M. Temminck expresses a doubt whether the second is a distinct species; and refers, with some slight doubt, Cinclus Pallasi of the Himalaya Mountains to the third. He states the geographical distribution of Cinclus Pallasi to be the Crimea, and other parts of European Russia, and says that it is very common in Japan, where it is named Konjusadara.

We select as an example the first of these.

Description.—Male.—Upper parts deep brown, tinted with ash-colour; throat, front of the neck, and breast, pure white; belly, rusty; bill black; iris pearl-grey; feet supernumerary. Length, body, 7 inches; wing, 9; half wing, 4 3/4 in.

Female.—Upper part of the head and back part of the neck ash-brown; lower parts; white upon the breast; lower parts yellowish rusy.

Young of the Year distinguished by the grey feathers which cover the head and the nape; feathers of the back and rump fringed with blackish; those of the wings with white towards the end; the white of the lower parts extends to the middle of the belly and towards the abdomen; but all these white feathers are finely varied with brown and ash-colour.

This is the Lernchiroillo and Merlo aquatico of the Italians; Tordo de agua of the Spaniards; Merle d'eau and Aguastre a gorge blanche of the French; Vattera of the Swedes; Poecrois of the Russians; Pontic, in the Swedish, Elargi; Spero, with a white head, and Birkke Engi of the Norwegians; Wasser-amel, Bach-amel, and Der Flodhek.

Water ouzel.
Adult and Young of the Year.

Nest of Water-ouzel. (Yarrell.)
Among Endogenes, the orders Botomaceae, Naladaceae or Fluviales, Pliaceae, Alismaceae, &c, consist entirely of water-plants; whilst one of the largest of the few families into which cryptogamic plants are divided, the Algae, consists almost entirely of plants which live in the water.

In the plant-kingdom, water-plants are distributed into several groups. One of the first divisions that suggests itself in the study of their forms is derived from the composition of the waters in which they grow. Thus we have the plants which grow in stagnant waters, those which grow in the sea, those which grow in the fresh waters inland. Most of the plants which grow at the bottom of the ocean or float in its waters belong to the family Algae, and in the article Sea-Plants we have given an account of their forms.

These plants are divided into branches, and these branches again into sections, which require the influence of salt-water on the soil on which they grow for their production. Thus species of the genera Salsola, Anabasis, Salicornia, and Glauca will not grow but where they can feel the influence of salt-water; hence they have been called plantae salinae. These plants are found not only where the sea washes, but wherever salt-springs find their way to the surface of the earth. There is another group of plants which have their existence confined to the fresh waters of rivers and streams, which receive the sea or on the banks of rivers to which the sea has access. Such are species of Chenopodium, Heliotropium, Vitex, Eryngium, Samolus, and the Mangrove (Rhizophora). These are called plantae littorales, seu maritimae.

There is also the natural order Algae, although by far the most conspicuous specimens belong to the tribes of Exogenous and Endogenous plants. As the sea claims nearly all the species of the genus Fucus and its allies, so the fresh-water plants claim the larger portion of the group. The Conferva and its allies. The genus Ulva [ULVACEA] has its species in both sea and fresh-water. The division of the natural order Algae containing plants resembling the Conferva are called Algae Conferroideae by Harvey, and contain the genera whose dry leaves or shells are those belonging to this division are composed of filaments and are really or apparently articulated; hence some writers call them Alga articulatae. We here subjoin the characters of the principal tribes into which this division of the order is subdivided.

The Ectocarpce are olive-green or green marine plants; their fructification is monocious and the capsules external, and the globules placed between swollen ramuli. It contains many genera belonging to the genera Lamellaria, Plumatella, &c. The genus Styloceramia is closely connected with the preceding; the colour of the species however is never green—mostly red or purple, and sometimes brown. The fructification is double, the capsules and globules being situated on different plants, and not on the same one. The genus contains six genera, one of which is the Griffithia, a plant named after Mr. S. Griffiths, who has done much to advance the knowledge of the order Algae in Great Britain. The most extensive genera in this tribe are Calothamnion and Polysiphonia. Most of the species belonging to these two tribes are natives of the sea, and are found attached to rocks, and to shells, stones, and corallines which are thrown up by the waves. Many of them are also found parasitic upon the larger sea-algae, as the various species of Fucus and others.

The Conferva are for the most part green plants, but sometimes pink or brown; the fructification consists of a granular-coloured internal mass, which assumes various forms.

The genus Conferva, although still containing numerous species, has been much reduced by the formation of new genera. It has however still an indefinite character, on account of the comparatively little attention which the order Algae has received from botanists. The filaments are arched together, and the globules are in the form of a fruit (7), an internal, coloured, granular mass (endochrome). Colour green, rarely purple or orange. The species of Conferva are found wherever there is water. In running streams they are usually found in the stones at the bottom, and are so abundant frequently in streams, ponds and pools as to conceal everything else. Some few of them are found in sea-water, and some on dry land. Some of the species have been found developing new peculiar forms under the influence of the ingredients of different
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mineral-springs; and one, the Conferva thermals, is only found in thermal-springs. Under favourable circumstances they sometimes go on developing to an immense extent in lakes or ponds in which they grow. They are generally at first green, but by long exposure to the surface of the water, and are exposed to the air, they become whitish. The rapidity of the growth of these plants is sometimes very extraordinary, and lakes, and even the ocean itself, are covered for several miles with floating masses of Conferva. The water is rendered as clear as glass. Lightfoot says he has seen at Edinburgh a kind of paper manufactured from the fibres of Conferva fructa. The C. aggreopila, globe crow-silk, or moor-ball, is found with its filaments rolled up into the form of a ball, so that it has the appearance of the balls of hair obtained by rubbing the starch in the stomachs of animals. It is an inhabitant of lakes, but is rarely found. It is not fixed to anything, but floats about at the mercy of the waves. It is the same water in which these species are found, that is the clue to the phenomena of the plant.

The genus Hydrodictyon has filaments which form a network with regular polygonal meshes, and viviparous articulations. There is but one species, the H. utriculatum, Common Water-net, which is a rare plant, and found only in the larger streams in England. It is a beautiful plant, forming a tubular net, which floats freely in the water. The meshes of the network are pentagonal or hexagonal, and vary in diameter from half a line to half an inch, and the filaments from the whole inch to three inches long. The plants die off, and are swept away, leaving a part of the stream uninhabited. The genus Mougeotia, named after J. B. Mougeot, a German botanist, has articulated simple filaments, which are finally united by transverse tubes. The endochore is granular, at length forming roundish globules at the point circumscribed with a thin film. The generation of the undivided plants whose filaments are said to unite before reproduction takes place. That this conjugation does take place previous to their granules possessing any reproductive power, in many of the species, there can be no doubt. But the conjugation of certain forms here supposed to be the conjugate group of genera, in which the phenomenon of conjugation does not take place previous to reproduction. These exceptions occur more particularly in the genera Odontes and Stigonema, at the stage of the species of this genus. Stigonema is found in Great Britain, and the most common is the M. genus varia, which is abundant in pools and ditches, sometimes covering a space 30 or 40 feet in diameter, and having a yellowish-green or dull yellow colour. The filaments are branched.

The genus Tyndardia has simple filaments, inoculating by transverse tubes. The endochore is in two roundish masses, which after conjugation unite to form a single globule. The species are found in ponds and ditches, and I do confess that the result is at the bottom of the water, and after a little time rising to the surface, where they form masses varying in size, of a yellowish and yellowish-green colour.

The tribe Oscillatoriaceae is composed of plants which are green or brown in colour, with continuous tubular filaments, seldom branched, though often joined together so as to appear branched. The fructification consists of an infarred mass divided by transverse septa, finally separating into roundish globules, or filaments, like the others, is found wherever there is water, and is more abundant in fresh water than in the sea. There are however many of them found in the sea, and also in mineral-waters. Many of the species, especially of Oscillatoria and Mougeotia, have several species of Os- cillatoria are found in Great Britain; the most common is the endochore, which is transversely striated, and at length circular. The species of Oscillatoria are found only in streams of fresh water, the tubular filaments of which are found derived from the filaments found naturally in springs. There are several genera in the tribe Oscillatoriaceae. Stigonema has cylindrical, cartilaginous, branched, inarticulate filaments, with brown or olive-coloured endochore, which is transversely striated, and at length circular. The species of Oscillatoria are found only in springs of fresh water, the tubular filaments of which are found derived from the filaments that have successively radiated and died in the course of that short period.

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stratum of indefinite extent, which is very conspicuous after a shower of rain. Other species are parasitic upon some of the Fucis, and are found in the sea.

The genus Oedogonium is plastic, oscillating, simple, continuous filaments, which are invested by a common mucous matrix. The species are very numerous, but many of them are very difficult to distinguish. They are not all found immersed in water, but always occupy damp places. The T. Oedogonium is an inhabitant of the warm-springs of Bath, occupying broad velvet-like patches of a dark green colour. Its singular appearance, Sir J. E. Smith observes, arises from the filaments being collected together into little ascending tufts, apparently rooted in the muddy deposit of the water. Each tuft proves, on examination, to consist of simple, reniform, even filaments, crowded together, and quite pellucid and equally destitute of joints and branches; their diameter is not more than an eighth or tenth thousandth part of an inch.

The next tribe of the Confervoid Algae is the Bryoideae. These plants cannot be called water-plants, although generally a large quantity of moisture is necessary for their production, and some of them live entirely in water. They are plants of double nature. Their superficial parts are related to many of the Fungi as to the Alge. They have articulated filaments, which are either transparent or coloured. Their fructification consists of granules, which are scattered among the filaments or capsules. They are found in various situations: some on rotten wood, others on glass or in chemical solutions; a few inhabit fresh-water, and one or two the sea. The following genera have been constructed for them. The number of species refers to the number of habitats rather than to the number of genera.

**Byssoscladium.** Filaments arachnoid, radiating from a centre, with scattered external granules. One species found on windows and damp glass.

**Mycentra.** Membraneaceous, opaque, tenaceous, coloured filaments. Four species, all resembling fungi in their characters.

**Chloroptus.** Rigid, subsolid, opaque, erect, minute filaments, falling to powder: with joints, often contracted. Eight species, mostly found on the stems of decaying trees. They are abundantly distributed, on rotten wood, others, on glass or in chemical solutions; a few inhabit fresh-water, and one or two the sea. The following genera have been constructed for them. The number of species refers to the number of habitats rather than to the number of genera.

**Protocenema.** Subarticulated, branched, rootless, mostly green filaments. Five species, found on damp earth, &c., and are suspected to be degenerate or rudimentary mosse.

**Hypoceros.** Hyaline filaments intervoven into a uniform membrane or gelatinous mass. Seven species, few of which have been found more than once, and then in various chemical solutions, as rose-water, solution of murate of barytes, ink, Madera wine. &c.

Lemmna. Hyaline filaments, erect, and parasitical. Three species, one of which is found on fishes and dead flies.

The remaining tribes of Alge which inhabit the water entirely, and about the real nature of which there is still much difference expressed under the name.

The remaining water-plants, with the exception of the less important species, will be found described under the names of their various genera. Nearly all the Confervae live quite under the water, and are called *planta supermersa.* To this same class must also be referred the species of Chara, Naias, and Ceratophyllum. Those which float about and are carried by streams and tides, are called *planta submersa.*


**WATER-RAIL** (Rallidae, vol. xix., p. 283.)

**WATER-SPANIEL.** (Spaniel.)

**WATER-SPOUT.** (Spout, Water.)

**WATER-WAGTAIL.** (Wagtail.)

**WATER-WHEELS.** (Hydraulics.)

**WATER-WORKS, WATER-PIPES.** In an extended sense the term water-works is applied to all machineries and engineering works for the purpose of raising, retaining, conducting, or distributing water, and also to contrivances for obtaining motive power from falls or current of water. Some of the sluices, fountains, pumps, water-wheels, and hydraulic engines generally; but as many of these are treated elsewhere, the chief object of the present article will be to notice the contrivances employed for the collection, purification, and distribution of the supply for the purposes of navigation or manufacturing purposes, referring to AQUEDUCT, CANAL, EMBANKMENT, SLUICE, FOUNTAIN, TANK, SEWERS, DRAINING, IRRIGATION, and HYDRAULICS, for information on other subjects embraced under the several denominations.

The importance of an ample and regular supply of pure water for domestic purposes, especially in large towns, where the rapid accumulation of filth of every kind renders frequent abolition of the person and apparel, as well as of houses and streets, essential to the preservation of health, is too strongly insisted on; especially as, notwithstanding the extent and comparative excellence of the means employed in this country for affording it, the poorest and most crowded districts of our large towns are often lamentably unacquainted with the principle, so important in modern water Works, by which water will find the same level at the two ends of a continuous pipe, unless prevented by confined air or some other impediment, notwithstanding any depressions or changes of level in its intermediate courses; and, as shown in these reports, p. 388, this assertion is incorrect. The want of suitable materials for pipes of large capacity, when exposed to the pressure of a head of water, is sufficient to account for the fact that they did not attempt, on any important scale, to distribute water for domestic purposes, until the great supply from an elevated source, conducting it by a nearly uniform and moderate slope to the point where it was delivered for use. In order to effect this, they erected costly aqueducts across such valleys as it was necessary to cross, and, as mentioned under AQUEDUCT, vol. ii., p. 204, they were sometimes compelled to conduct them in a serpentine direction, in order, by increasing their length, to render the slope sufficiently moderate. A list of the aqueducts built up to the present time is given in the Reports of the Committee of 1855, vol. xx., p. 102; and under FOUNTAIN is a notice of the arrangements adopted by the Romans for distributing the water brought to the city by them.

The modern engineer, instead of being compelled to erect such gigantic works to convey a current of water from one place to another, has the means of providing for the wants of a whole town without any official stream, is enabled, by the possession of materials suitable for the construction of pipes of any required size and strength, to convey a current of water in any direction, and to vary its level according to circumstances, raising or lowering it at will, and facility in the provision of the highest portion of his pipe be somewhat less than that of the reservoir from which the supply is drawn. The same circumstances, coupled with the command of unlimited moving power for the propulsion of water along a scale of works, enable line of water to be distributed at a higher level than the source whence the water is procured, or even to supply a town or district entirely
with water taken from a lower level. Referring to Hydrodynamics, vol. xii., p. 369, for the means of determining the necessary size for delivering a given quantity of water at any required distance, under given circumstances of direction and pressure or head of water, we proceed to notice a few of the points involved in the construction of such water-works as have for their object the convenient distribution of water for household purposes.

The most simple case for the construction of water-works is that where the source of supply is situated at a greater elevation than the points at which water is required to be delivered. In such a case, unless there be a natural reservoir of sufficient capacity, one or more must be formed artificially, being rendered water-tight by puddling or other means, and from this reservoir large pipes, or mains, are led by the water into the principal parts of the town. Branch pipes, opening into the larger mains, are added to convey the water into the minor streets, and smaller leaden service-pipes, each having a stop-cock to prevent the escape of water when not required, complete the distribution of the water into individual habitations. When the supply of water at the original source is plentiful, no further apparatus is necessary, as the mains may be kept continually charged, and consequently water will flow from the service-pipes whenever the stop-cocks are opened; but where the water is not so abundant it may be distributed more economically by a provision for closing the passage of some of the mains, dividing the town into districts, and allowing the mains in one district to be charged at one time, and those of another district at another time. This arrangement involves the necessity of using cisterns or butts in connection with the service-pipes, which may be filled with the water while the mains are charged, and form small reservoirs for the use of individual households during the time in which the water is diverted to another part of the town. In this case the service-pipe, instead of being fitted with a stop-cock to turn by hand, has a self-acting cock or valve, usually of the construction called a ball-cock, which is a cock having on its upper end a ball that will float up and stop the passage of water at the end of which carries a thin copper ball of four or five inches diameter. The whole is so fixed that when there is little or no water in the cistern the weight of the ball causes it to descend as far as a fixed stop attached to the axis of the cock will allow it, and thereby to open the cock ready for the admission of water whenever it may be turned on to the main; but so soon as the cistern becomes filled to a certain height, the buoyancy of the copper ball causes it to rise with the surface of the water, until it has turned the axis of the cock and prevented the inflow of any more water, when it of course remains stationary until the gradual sinking of the water, as it is drawn off for use by the ordinary stop-cock attached to the cistern, allows it again to be turned by hand to open the cock for fresh supply. Ingenious as this arrangement is, it is very liable to breakage, and a little stiffness in the working of the cock, such as may arise from remaining out of use for a time, occasions its action to fail, and either prevents the admission of water at the proper time, or, more commonly, allows the cock to remain open after the cistern is filled, and so causes serious inconvenience and waste of water. To remedy this, several plans have been proposed. Hebert (Engineer's and Mechanic's Encyclopedia, vol. ii., p. 852) mentions a very simple contrivance by which a float connection with the end of the service-pipe is turned vertically downwards, and terminates in a valve-seat, into which a valve is raised by the action of a float connected with it by a vertical rod. This does not however appear to be so effectual as the contrivances in which leverage is employed to aid the action of the valve, or those in which the pressure of the water in the service-pipe is employed for the same purpose. A very ingenious apparatus of the former kind, contrived by Mr. Crockett, is described in the 52nd volume of the Transactions of the Society of Arts (p. 54). It also has a vertical valve, which rises upwards against its seat by a lever connected with a hemispherical copper float; but it is distinguished from other

ball or float-valves mainly by the addition of a ratchet and click apparatus which retains the lever and float in the lowest position to which the substance of the water allows them to fall, and consequently keeps the valve fully open, until the water rises to the required level, when, by the buoyancy of a second and smaller float, the click is released so that the main float rises, and closes the valve. As the main float is, when the cistern is fully charged, entirely submerged, the whole of the power derivable from its buoyancy is applied to the closing of the valve. This apparatus has the merit of working in a smaller vertical space than most others, so that it is well adapted for shallow cisterns; but while it is perhaps the most perfect contrivance of its kind, it is too complicated for general use. Referring the reader to the volume above cited for a fuller description, with cuts of the apparatus, we therefore proceed to describe a more simple and very effectual contrivance invented by Mr. Bullock, of which there is an account in the thirty-eighth volume of the same work (p. 57). Fig. 1 is a representation of this apparatus a being a bent tube, the upper extremity of which is tapered for insertion into the end of the leaden service-pipe, and which has at its lower extremity a curved bar b, to support the fulcrum of the lever c d e. The tube is represented in section, in order to show the form of the inverted conical valve, which is raised so as to allow a free discharge of water from the pipe. The separate figure f shows the form of the opening at the lower end of the tube a, with the ring which serves as a guide for the vertical stem or tail of the valve, and also the form of the bar b; and at g is a separate representation of part of the lever, showing the form of the swivel-joint by which it is attached to b: b has two shallow holes, which receive the points represented in the separate figure g; and the joint may be made tighter or looser at pleasure by turning the thumb-screw d, which carries one of the swivel-points. When the cistern is nearly full, the ball c is borne up by the water, and consequently the shorter end of the lever falls, allowing the valve to descend by the combined action of its own weight and the pressure of the water above it. In another float-valve on the same principle, contrived by Mr. Magson, and described in the forty-fourth volume of the Society's Transactions (p. 50), the fulcrum of the lever is placed immediately below the valve, and the shorter arm of the lever is curved in such a way as to increase the efficiency of its action. Fig. 2 represents, on a larger scale than the preceding cut, the most important part of this apparatus; the valve and lever being left white to distinguish them from the stationary parts. The valve is shown open, as it would be when the float is depressed; but the dotted lines show the position of the lever when the float is elevated, and the valve is allowed to fall into its seat. The float con-
side of a flat round piece of wood, which may be attached to the long arm of the lever simply by a screw, or better by a joint which will allow it always to assume a horizontal position, whether the lever be raised or depressed. In addition to its greater certainty of supply, the valve will also admit the supply of water into a cistern in half the time required by the common ball-cock; that it effects a saving of twenty-five per cent. in first cost; and that, as it is made of cast-iron, it does not afford the same temptation to pilferage, inasmuch as it has no brasses or copper. Mr. Magson’s valve had been found to act satisfactorily under the pressure of a column of water of more than seventy feet. In the same paper is described an improved stand-pipe, with a valve of the same character as that just described, which has been in common use in many water-mains, and private service-pipes are rendered useless by ice. The common stand-pipe is simply a wooden pipe inserted into a plug-hole connected with the main, and fitted with a faucet and spigot, or sometimes with a common cock; but as such pipes, when set up in a common street, are very liable to be left open from carelessness or mischief, thereby occasioning a waste of water, and the formation of ice which renders it dangerous to approach them. Mr. Magson’s valve is constructed in such a manner that, while pressure is applied to the handle of a bent lever which lifts the tail of the valve. Such a contrivance might be useful in many other cases, since it renders the accidental escape of water impossible.

The pumps most frequently referred to the means of supplying a town with water from a source situated at a higher level than the points at which the water is to be delivered; but it frequently happens that considerabld districts, and sometimes, when the water is obtained from a river flowing through another nation, it is necessary to be supplied, as the pipes extend, lies at a higher level than the source. In this case the most usual course is to contract one or more reservoirs at a suitable elevation, and to supply them with water through ascending pipes or mains from the force-pumps. In this way the steam-engine forms the principal source of power. The reservoirs may, in such cases, be formed upon elevated ground, or, in the absence of any more convenient site, upon the tops of high buildings; and from them the distribution is effected in the same way as when the water is originally obtained from a level source.

Sometimes also it is desirable to supply houses at a higher level than the most elevated reservoir, and this object may be effected either by employing a separate pumping-engine to propel the water from the reservoir to a point in the main which lies at a higher level in the ordinary way; or, in some cases more economically, by closing for a time the passage between the reservoir and the force-pumps by which it is supplied, and opening a connection between the ascending mains and the high-service pipes. To prevent the danger which might arise from the application of too great a pressure by the pumping-engine, a vertical pipe, sometimes called a ‘standing-pipe,’ should be connected with the pipes for the high delivery, and carried up to an elevation equal to that of the highest point to be supplied. This pipe, which may be erected in the reservoir, and left open at the top, or turned downwards again in the form of a siphon, acts as a safety-valve to the whole system, and allows the water to overflow when too much pressure is produced. By this means the saving the mains from the danger of bursting. In some situations such standing-pipes may be objected to as unsightly, and in others they may prove inconvenient or dangerous, from their attraction for the electric fluid. The safest means for avoiding this is to provide water loaded to a degree equal to the pressure of the required column of water, an improvement which has been carried into effect by Mr. Simpson at the reservoir of the Chelsea Water Company in Hyde Park, and in some other places. The same mode of propelling water along the ordinary mains and service-pipes by means of force-pumps, instead of causing it to flow along them by the hydrostatic pressure of an elevated reservoir, is sometimes adopted to a considerable extent in supplying a town directly from a river or other low source.

The repeated investigations by commissioners and par-
lamentary committees, especially within the last fifteen years, into the state of the supply of water to the British metropolis, and the various means suggested for its improvement, have elicited much curious and valuable information. It is stated that in the use of Thames water, it must be admitted that whenever a river is exposed to the impurities consequent upon the drainage of an extensive and densely inhabited district, every precaution should be observed in taking water for the appliance of the mains from situations the least exposed to vitiating causes, and every practicable means should be adopted for removing such impurities as may be pumped up with the water, before it is distributed for use. The tide-water, suggested a means of avoiding these evils, by such of the metropolitan water companies as derive their supply from the Thames, of measures by which the water of that river is rendered unobjectionable for all practical purposes, and it is worthy of recollection that with all the changes that have been wrought in the use of Thames water, it has been seriously felt by the New River Company during severe winters; and it has been urged by way of objection to some plans for supplying part of the metropolis with water brought from a considerable distance in other open channels, that the Thames, by its great depth, is not likely to be affected, either in quantity or quality, by the vicissitudes of droughts and floods, and least likely to be obstructed by ice, than can be obtained from minor streams, sometimes exposed to pollution from the nuisance which it is impossible for the Konstruct of the land required for their construction, the water is liable to impunity from the banks being washed down by rain, or trodden in by cattle, and from the stream being used for washing dogs, the nuisance which it is impossible for the construction of a subterraneous channel or tunnel, six feet in diameter, with a sufficient slope to cause the water to flow freely along. The channel proposed by Mr. Taylor was to be nine miles and a quarter long, commencing for the first mile at Southwark, and terminating under Hampstead Hill, the summit of which is 437 feet above low-water mark at Hammersmith; and reservoirs were to be formed on the surface at the end of the aqueduct, and at any other elevated points from which it might be desirable to distribute the water, which was to be raised into them through vertical shafts by steam-pumping-engines. By this means the power of the steam-engine should be applied much more economically than in the usual method of forcing water through a great length of iron piping, up inclined planes, and frequently along a tortuous course. The friction and resistance thus occasioned is so great that, according to Mr. Taylor’s calculations, engines depending upon a height of forty feet would not amount to more than fifteen millions of pounds one foot high for every bushel of coals consumed, while a duty of seventy-four millions of pounds per bushel had been attained by some of the Cornish steam-engines employing the sitarg engine by such engines, and the saving the mains from the danger of bursting. In some situations such standing-pipes may be objected to as unsightly, and in others they may prove inconvenient or dangerous, from their attraction for the electric fluid. The safest means for avoiding this is to provide water loaded to a degree equal to the pressure of the required column of water, an improvement which has been carried into effect by Mr. Simpson at the reservoir of the Chelsea Water Company in Hyde Park, and in some other places. The same mode of propelling water along the ordinary mains and service-pipes by means of force-pumps, instead of causing it to flow along them by the hydrostatic pressure of an elevated reservoir, is sometimes adopted to a considerable extent in supplying a town directly from a river or other low source.

A Brief Description of the various plans that have been proposed for supplying the metropolis with fresh water. [Page, London, 1851]
effecting a saving to the company of three-fourths of the fuel previously expended.

In some of the schemes for improving the metropolitan supply, it has been proposed to obtain water from the Thames at or above Teddington Lock, or to remove the lock now situated at Teddington to Richmond, and to take the supply from the portion of the river which would then be cut off from the influence of the tides; but in addition to the expense of an artificial aqueduct, whether open or covered, of the length necessary for such a scheme, it would have the disadvantage of injuring the navigation by the abstraction of a large portion of the water.

In Mr. Martin's plan for bringing water from Teddington Lock, it was proposed to raise the weir so as to give it a fall of six feet, and to erect water-wheels at the weir, by which the power of the water would effect an elevated reservoir in Richmond Park, from which it should be conducted in large pipes, either under or over the surface, to Earl's Court, between Kensington and Brompton, where the pipes of the various companies which supply the western part of London should receive their respective supplies from the aqueduct.

In addition to plans for obtaining water from the upper part of the river Thames, or from minor streams, such as the Colne, the Verulam, and the Wandle, various schemes have been proposed for extensive reservoirs by embanking or sinking wells in or in the immediate neighbourhood of London. In some of these it has been proposed to sink wells or tanks of considerable depth near to the banks of the Thames; but as the greater part of the water entering such tanks is received with the water entering the river, such a plan offers few, if any, advantages for general adoption beyond that of purifying water which has been taken directly from the river by allowing it to settle so as to deposit the greater impurities and then causing it to pass through a filter. Some of the kind has however been done successfully by the West Middlesex Water-works Company, who have formed extensive reservoirs on the banks of the river at Brentford, which, though at high-water, forces a quantity nearly sufficient for one day's supply through the gravelly bed and bank. A floodgate opening into the upper part of the reservoir affords the means of admitting a supply direct from the river, when required.

Proposals for supplying the metropolis from wells bored to such a depth, and in such situations, as to be wholly independent of the Thames, have attracted much attention. The object proposed by such bores is to obtain water from the strata of the bed of the Thames below the impervious London clay, such water being originally collected at the points where the pervious strata rise to the surface at the boundaries of the great basin in which the metropolis is situated. Artifical water-holes with a vertical bore, as explained by Mr. New Walks, vol. ii. p. 412, it will be sufficient to refer to the question whether the supply obtainable from them would be sufficient in quantity for the use of the whole metropolis, or even of any considerable portion of it, a point which has been shown to be doubtful.

Mr. Webster, in a course of lectures delivered at the Russell Institution in 1839, after advertising to other cases of failure in the sinking of Artesian wells, and to some in which the sinking of one well has drawn water from another in its vicinity, thereby proving that the supply from the pervious strata is far from unlimited, alluded to an experiment made by the New River Company, who sunk a large shaft or well at their reservoir in the Hampstead Road, and, after being connected with iron pipes, and the stratum of sand and water, and sinking to the chalk below, at a total expense of about 12,000l., could not obtain more than 650,000 gallons of water per week, and were only able to keep their pumps for raising it at work one week in seven.

...
including the cost of the pipes and lead, and making good the roads, was about 8s. per yard; and the whole of the works required in connection with the change in the mode of obtaining a supply of water by this company was nearly 200,000l. From the reservoirs at Paddington, which are cut in the Sarsen stones of Westminster, and which has not been attacked by currents of water from the bed of the river, and from which the water is distributed to the districts supplied, with the assistance of additional engines. In addition to the above-mentioned works, the company stated to the committee of 1840 that they were preparing means for filtering their water before delivery.

The West Middlessex Water-works Company, who, likewise supply part of the western districts of the metropolis, have also, since the year 1834, formed some extensive works for the improvement of their supply, consisting in the construction of a large reservoir near the mouth of the Thames, immediately opposite to the site of the proposed new bridge, and which has been alluded to in a previous column, and in which the water is allowed to settle and deposit its grayer impurities before it is conveyed across the bed of the river, by a conduit resembling that of the Paddington company, to the engine-house at Hammersmith.

The proprietors of the Chelsea Water-works have also expended upwards of 60,000l. in measures for improving their supply, which is taken from the part of the river known as Chelsea Reach, and is supplied in large reservoirs on the south side of the river. In order to avoid contamination by the sewage, which enters the river near the point where their dolphin, which was formed of brickwork and surmounted by a perpendicularly iron structure, was formerly situated, this Company erected a large reservoir of several pipes to the right-hand side of the river for a distance of several miles receives no pollution beyond that occasioned by land-drains. On the south side of the river the Vauxhall Company obtains water of great clearness and purity from beneath the third arch of Vauxhall Bridge, a point which has been observed by watermen for its gravelly bottom, which is remarkably free from mud and sediment. From its establishment in 1806, this company has possessed extensive settling reservoirs near Kennington Lane; and in 1831 arrangements were made for conveying the water partly through the Lambeth works and partly from the Thames at a point a little above Waterloo Bridge, opposite to the works of the company in the Belvidere Road; but it is pumped from those works to an elevated reservoir at Brixton, where a large tank was installed about 1834 in providing means for its purification by subsidence and filtration.

By the above-mentioned improvements, and others effected by companies or companies on the same or different principles, the purity and probably the quality of the London water have been materially improved. It is of a clear, soft, and agreeable taste, is a considerable improvement, and is now fit for drinking without previous distillation or fermentation. It may be further improved by the addition of a very slight proportion of soda or of any of the common drinking-water salts. It is not generally of a good quality, being frequently alkaline, and sometimes it contains an unduly large proportion of certain impurities. It is a common practice to pass through it a current of air, which dissolves the carbonic acid and preserves the water in a gaseous state. The London water is not, however, free from various impurities. Among the more important of these are:

1. Silt and mud, which are removed by filters or sedimentation basins.
2. Algae, which are killed by chlorination.
3. Iron, which is precipitated by adding lime or other conditioning agents.
4. Manganese, which is oxidized in air.
5. Copper, which is precipitated by adding lime or other conditioning agents.
6. Lead, which is precipitated by adding lime or other conditioning agents.
7. Silver, which is precipitated by adding lime or other conditioning agents.
8. Zinc, which is precipitated by adding lime or other conditioning agents.
9. Arsenic, which is precipitated by adding lime or other conditioning agents.
10. Fluorine, which is precipitated by adding lime or other conditioning agents.
11. Bacterial and viral pathogens, which are killed by chlorination or other disinfection processes.
12. Heavy metals, which are removed by filtration or precipitation processes.
13. Organic pollutants, which are removed by coagulation and sedimentation processes.
14. Pesticides, which are removed by filtration or adsorption processes.
15. Nitrogen compounds, which are removed by filtration or precipitation processes.
16. Phosphorus compounds, which are removed by filtration or precipitation processes.
17. Fluoride, which is precipitated by adding lime or other conditioning agents.
18. Arsenic, which is precipitated by adding lime or other conditioning agents.
19. Chloride, which is removed by filtration or precipitation processes.
20. Nitrite, which is removed by filtration or precipitation processes.
21. Nitrate, which is removed by filtration or precipitation processes.
22. Sulfate, which is removed by filtration or precipitation processes.
23. Carbonate, which is removed by filtration or precipitation processes.
24. Bicarbonate, which is removed by filtration or precipitation processes.
25. Sulfide, which is removed by filtration or precipitation processes.
26. Alkalinity, which is removed by filtration or precipitation processes.
27. Acid, which is removed by filtration or precipitation processes.
28. pH, which is adjusted by adding lime or other conditioning agents.
29. Temperature, which is adjusted by cooling or heating.
30. Odor, which is removed by filtration or precipitation processes.
31. Taste, which is removed by filtration or precipitation processes.
32. Chloroform, which is removed by filtration or precipitation processes.
33. Trichloroethylene, which is removed by filtration or precipitation processes.
34. Tetrachloroethylene, which is removed by filtration or precipitation processes.
35. Volatile organic compounds, which are removed by filtration or precipitation processes.
36. Nitrates, which are removed by filtration or precipitation processes.
37. Nitrites, which are removed by filtration or precipitation processes.
38. Ammonium, which is removed by filtration or precipitation processes.
39. Dissolved oxygen, which is removed by filtration or precipitation processes.
40. Dissolved carbon dioxide, which is removed by filtration or precipitation processes.
41. Dissolved nitrogen, which is removed by filtration or precipitation processes.
42. Dissolved phosphorus, which is removed by filtration or precipitation processes.
43. Dissolved silica, which is removed by filtration or precipitation processes.
44. Dissolved calcium, which is removed by filtration or precipitation processes.
45. Dissolved magnesium, which is removed by filtration or precipitation processes.
46. Dissolved iron, which is removed by filtration or precipitation processes.
47. Dissolved manganese, which is removed by filtration or precipitation processes.
48. Dissolved copper, which is removed by filtration or precipitation processes.
49. Dissolved zinc, which is removed by filtration or precipitation processes.
50. Dissolved lead, which is removed by filtration or precipitation processes.
51. Dissolved silver, which is removed by filtration or precipitation processes.
52. Dissolved cadmium, which is removed by filtration or precipitation processes.
53. Dissolved chromium, which is removed by filtration or precipitation processes.
54. Dissolved arsenic, which is removed by filtration or precipitation processes.
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56. Dissolved molybdenum, which is removed by filtration or precipitation processes.
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of fermentation takes place in the water when it is in contact with the sand, especially when moss or other vegetable matrices are present in any considerable quantity, by which the water is greatly purified, while a very perceptible film is thrown up to the surface. By the works above described, from 400,000 to 500,000 cubic feet of water are filtered every day.

The antiseptic properties of charcoal render it a very effectual, though costly, filtering material. Animal charcoal has been applied in France as a purifying medium in portable filters, in which it acts well, though the percolation of water is slow. As has been previously remarked, it has been partially practised with the water of the Seine at Paris. A plan of charcoal filtering is proposed in the appendix to the little work referred to in a note on a previous column, which appears well adapted for use upon a small scale, and might be applied in cases where the filtering bank or embankment, on one side of which is the water to be purified, and on the other the reservoir of filtered water, and the charcoal is disposed in the form of a thick wall, with vertical sides, enclosed by a framework of timber, and performed by placing the finest portion of the charcoal in the centre, and so cover the top of the wall or embankment with moveable planking, by opening which the charcoal might be removed and renewed at any time without deranging any other part of the arrangement. The charcoal is thus placed in the filtering bank or embankment, on one side of which is the water to be purified, and on the other the reservoir of filtered water, and by maintaining the same地位, it is proposed to pass through them before coming into contact with the charcoal. This inclined position of the surface of fine sand would occasion the heavier impurities to slide towards the bottom of the slope, whence they might be removed as often as necessary. It should be observed, that as the fine sand which forms the uppermost layer would, at the top of the slope, lie in immediate contact with the planking, the planks should be close-jointed and left without perforations at the bottom, lest the impurities they contain should pass through before coming in contact with the charcoal.

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For the watering of roads, and some other purposes for which large quantities of water are required, it is unnecessary to go to the expense of a perfect system of filtration, excepting where, for ornamental purposes, the supply must be conveyed through the same pipes as those conducting pure water for domestic use. Since the increasing extent of the supply afforded by the Chelsea Waterworks Company made this consideration a matter of much importance and utility, the following plan was submitted to the supply of the basin in Kensington Gardens, the Serpentine River, and the other ornamental waters in Hyde Park, St. James's Park, and the gardens of Buckingham Palace, connecting also with these works the supplies for watering the streets and roads in their district. This water for these purposes is obtained from a large land-spring well in their works on the bank of the Thames, assisted by river water thoroughly filtered. This measure has, we are informed, proved a highly important one, as it relieves the mains by preventing the clogging of the pipes, and the smaller ones to which they were subjected during summer for watering the roads, especially as this supply was required during the day-time, when it is of consequence that water-companies should direct all their powers to the supply of drinking water. Another demonstration of the excellence of this plan, inasmuch as it leads to a continual change in those ornamental waters which would otherwise be unhealthy stagnant pools. The Serpentine has been much and reasonably complained of on this ground, its supply having been formerly derived from a stream which in course of time became a common sewer, while, since that nuisance has been destroyed by diverting the sewer, its level has been frequently much reduced by evaporation in a dry season, by which it has been reduced to a state by no means calculated to benefit the health or gratify the senses of the frequenters of the park, and especially of those who make use of it for bathing. The water-companies are now allowed to take any quantity of water from the Serpentine, provided that they do not divert it to a purpose other than the supply of water to it through the Kensington Basin. This they frequently do to the extent of 500 tons daily, which, together with the supply taken by government, whom the Serpentine belongs, and the water companies of the roads and malls in St. James's and the Green Parks, occasion a circulation highly favourable to the salubrity of this sheet of water.
manner by enlarging the bore in a conical form at one end of the pipe, and hewing the end of the adjoining pipe into a taper form so as to drive into the conical cavity. To prevent the socket end of the pipe from bursting by the force applied in hammering up this joint, an iron hoop was employed, fixed on to it. A thin earthenware conical water-tight at first, which was by no means easy, speedily became defective from the decay of the wood forming the thin or spigot end of the pipe. Perhaps the best method of connecting wooden pipes is that in which the bore is enlarged at one end to the size of the cavity at the other end of the pipe and the connection is formed by a short iron tube, cast externally into the form of a double cone, and driven into the adjoining ends of two lengths of wooden pipe. Among the schemes which have been proposed and tried to a limited extent for avoiding the defects of being protected, to conduct water in a state of greater purity than in those formed of cast-iron, are the use of wooden pipes formed of staves, fitted together and hooped like barrells; of stone pipes, for the formation of which very ingenious machinery has been contrived, capable of cutting several concentric pipes out of a single block of stone by the operation of a series of saws somewhat resembling those known as fregon saws (Saw-Mill, Fig. 6, vol. xx., p. 461); or, in a kind of patenting the wood, which excels others for keeping water perfectly pure, and which may readily be fashioned into a form convenient for joining, the difficulty of which is a serious objection to stone pipes. To obviate the objection to earthenware pipes, and their fragility, has been proposed, to use pipes lined with pottery, but formed externally of wood or iron.

While this article is in the press, the newspapers announce the manufacture, in France, of water-pipes formed of coarse glass, and proved externally, to withstand water-bitsmens. These are joined together with bitsmen, in a similar way to the lead or cement used with common iron pipes, and they are said to be considerably cheaper than those of cast-iron, and capable of sustaining a greater pressure.

While however other materials are used advantageously employed to a limited extent, and under peculiar circumstances, cast-iron is the only material at once sufficiently strong, strong, and manageable, or convertible into the required forms, for extensive water-work purposes. Pipes of this material are cast, usually in lengths of from eight to ten feet, of any required size, from a few inches to three feet or upwards in diameter; and every variety of curved or angle pipes, pipes with fire-plugs, &c., can be readily furnished. These pipes are connected together by flanges connected by screw-bolts, with an intermediate packing of lead or other soft substance; but this plan is not suitable for adoption to any considerable extent, as it makes a large portion of the alteration of length occasioned by the expansion and contraction of the metal. The usual plan, both for large and small pipes, is to cast an enlarged socket at one end of each length of pipe, to receive the other or smaller end of the adjoining pipe, which is cast with a slightly tapering angle at each end. In noticing, on a previous column, the works of the Grand Junction Company at Brentford, a mode of connecting such pipes without packing has been described; but the more general practice is to run lead into the joint, so as to fill up the cavity left in the socket after the spigot end of the pipe has been inserted, a gasket having been previously inserted and driven tight all round to prevent the lead from running into the pipe, and a temporary clay mould being applied to the collar; or, to effect the same object by caulkling with hemp and iron cement, which is a mixture of iron borings or turnings with sulphur and sal-ammoniac, moistened with water as it is rammed in. By the subsequent oxidation of the particles of iron, this composition iconcists into a solid body, and forms a very secure joint. Roman cement has also been used for this purpose. Another mode of securing the joints of iron-water-pipes, which appears to present many advantages, is by the application of a series of wooden wedges to fill the cylindrical cavity of the pipe, in a paper communicating with Mr. Thomas Wicksteed, engineer to the East London Waterworks, to the Transactions of the Society of Arts (vol. ii., part ii., p. 50, for the session of 1836-7), it is stated that such joints have been successfully employed for forty years at the Norwich Waterworks, and for more than half a century in the collieries near Newcastle on Tyne, and that they had been

found both cheaper and better than joints secured with lead or cement. The East London Waterworks Company had, at the date of Mr. Wicksteed's communication, used these joints for seven years with the most favourable results. With regard to their durability, in addition to the well-known metal they are protected, as it is in these joints, from the action of air and water, evidence is adduced of their having remained perfectly sound for fifty years; and it is stated that all those made by the East London Company during five years had stood, in all, without having been ruptured or leaked. They had then 38,558 yards, or nearly 22 miles, of piping laid with wooden joints, the diameter of the pipes varying from three up to eighteen inches; and the repairs had cost much less than with lead or cement. To obviate the objection of such a joint being blown out under a great pressure, Mr. Wicksteed tried joints in pipes of three different diameters under a proving machine, increasing the pressure until it became equal to a column of water 723 feet high, without affecting the joints; and he states that at that pressure merely for fear that the apparatus might give way. The pipes were, respectively, three inches diameter and three-eights of an inch thick, five inches diameter and half an inch thick, and eighteen inches diameter with a thickness of barely three-quarters of an inch; and Mr. Wicksteed believes that they would have burst before the joints could have given way.

The wood recommended for forming the wedges is the best man of English or American oak, or perhaps beech, the cut is to make into chocks nine inches long, which are to be riven with an axe into pieces about two inches wide and three-quarters of an inch thick. These pieces are then worked with spokeshaves into the proper curved form, one side being hollowed to fit the outside of the pipe, and the other rounded into a convexity fitting the inside of the socket; and they are made to taper slightly from the middle towards each end, so that when cut transversely in half they form two wedges of four inches and a half long. These wedges are in the first place driven into the pipe with the wedges, and are placed in the vousoirs of an arch, and driven in by a set applied to their external ends in succession, the wedges being thus driven in gradually all round, as a cooper hammers on a hoop. When fully driven in, if any of the ends project, they are cut off with a handsaw. When the work has been made as many joints as may be required to allow time for filling up the trench and covering in the pipes at the close of the day's work, a bonnet is strapped on to the end of the newly laid line of pipe, and water is allowed to run so as to try the joints under the pressure of the mains; or, in new works, where there is no connection with charged mains, under the pressure of a force-pump. The joints are then carefully examined, and wherever any leakage is discovered or the joint may be thought defective, it is allowed to drain dry, and a wooden spile is driven in to tighten the wedges. The subjoined cut (Fig. 3) gives sectional representations of a joint secured with wooden wedges, the end view showing the manner in which spiles may be inserted at the junction of the wedges.

![Fig. 3](image-url)

Where it is necessary, in order to accommodate slight changes of direction in the road, to make joints a little out of the straight line, wedges are inapplicable, and the or ordinary joint is made by a bend or a curve at any jointing at a curvature of about a quarter of a circle. Mr. Wicksteed conceives that the elasticity of the material gives it a firmer hold on the joint, and consequently renders it less liable to be blown out than either lead or cement; and he mentions, as disadvantages of the latter, that it required time to make with a chisel, none being applied; and that if it should fail, the joint must be made entirely fresh, as it can neither be spiked, like a wood joint, nor set up, like one filled with lead. To show the economy of the system recommended, he gives a table of the relative cost of wood, cement, and lead joists for one
An ingenious flexible iron main was contrived by Watt, in the form of what is known as a coiled or corkscrew, a supply of pure water across the bed of the river Clyde, for the Glasgow Waterworks Company, which, by the occasional introduction of a kind of ball and socket-joint, is enabled to adapt itself to the uneven surface on which it lies. The iron pipe is laid upon long frames or beds of timber, with moveable joints corresponding with those of the main itself; and the laying of the whole in its assigned place was effected by hauling or dragging it from one shore to the other, the end of the pipe being, of course, plunged up during the operation. The pipes may be the common, 3 inches diameter, and as it was found to answer the desired end very satisfactorily, and a greater supply of water became necessary, after a few years a second was added, eighteen inches in diameter. A full description of the conveyance of water to Glasgow is given in the "Edinburgh Philosophical Journal," vol. iii., p. 60.

When the use of cast-iron pipes for water was first becoming common, much prejudice existed against them, on the ground that, while they were very expensive to purchase, they would eventually prove erroneous, that they would deteriorate the water conveyed through them. A slight degree of oxidation takes place at first, but after a thin crust has thus been formed on the surface of the iron, it affects the water no further, at least not in a perceptible degree. It has been asserted that water which contains lime deposits, when passing through iron pipes, a crust which defends the iron from corrosion, and which will not increase beyond a moderate thickness; and this discovery has been usefully applied by sending limes, that is, water to which lime is added, to form such a crust artificially, when corrosion has been found to take place to such a degree as to render the water unpleasant.

Lead, from the facility with which it may be manufactured, formed one of the earliest materials for water-pipes, having been employed by the Romans as early as a very early period in the history of modern waterworks. For large pipes it has been entirely superseded by cast-iron; but it is still employed for the small branches or pipes by which the house is supplied, for which purpose its pliability renders it admirably adapted, as it is frequently found in England necessary to be conducted in a tortuous and angular course, in order to conceal it as much as possible where they pass through kitchens, &c. Any joints that may have to be made in the pipes, when laid in the ground, or in joining the pipe to a cock, cisterns, &c., are effected by soldering; the surfaces to be united being made perfectly clean and bright, and the parts being held or fastened together, while the plumber pours the solder upon the joint, holding a pad made of tallow beneath the part to prevent the liquid solder from falling to the ground. This operation must be frequently repeated before the lead becomes sufficiently hot to take the solder; and when it begins to take effect, the workman continues patting and work, not to make the joint so tight as to keep it held in his hand, to keep it uniformly about the joint. A soldering-iron may be applied to facilitate the operation as soon as the solder begins to adhere; and a considerable body of solder is left round about, forming a lining, a thickness being collar. In soldering pipes laid in the ground, as the operator cannot look directly at the underside of the pipe, a small mirror is employed, to enable him to see when the joint is perfect. It should be borne in mind, in using lead pipes, that their want of elasticity renders them unfit for employment to convey water impelled by the strokes of an engine-pump, because the impulse communicated by the pump causes the pipes to swell, and they do not return to their original dimensions, but become of a much greater thickness, which may reduce their thickness until they burst.

An important point to be regarded in laying any system of pipes for the passage of water is to keep the waterway as uniform as possible; contractions and enlargements being very objectionable, as affecting the velocity of the current. On this account all such cocks as may occur in the course of a pipe should have a waterway equal to that of the pipe itself, a matter which is not unfrequently disregarded, on account of the expense of large cocks. On the first admission of water to a pipe which has a tortuous course, the passage is sometimes impeded by the lodgment of air in the upper bends of the pipe; to remove which, in the case of leaden pipes, plumbers resort to a very simple expedient. This consists in driving a nail into the pipe at or a little beyond the highest part of the bend; and, while it remains in, hammering up the lead round about it in the form of a little button or point. The nail is then withdrawn, and the pressure of the water causes the air to rush out violently. When it has all escaped, and water begins to follow it, the hole is closed by a few strokes of the hammer upon the portion of lead beat up about the nail. If the pipe be so situated that air cannot enter at either end, it will, after this treatment, continue to yield a full supply for years. In the pipes connected with waterworks, however, many cases occur in which air has frequent access to the pipes, and then an apparatus must be used which will allow the air to escape wherever the pipe is being charged with water. An air-pipe with a cock to open and close by hand would be troublesome; but in some situations an open air-pipe may be used, rising to a higher level than the mouth of the pipe, in which case the water will rise in the air-pipe to the level of the reservoir from which the pipe is charged, but will not overflow, and the air will rise in bubbles through it. Desaguliers contrived an apparatus for removing air from such bleedings, in which, after the escape of the air, the water was supplied by a kind of ball-cock acted upon by water escaping from the pipe into a small cistern adjoining it; and Robison describes a very simple contrivance for the same purpose by the late Professor Russell, of Edinburgh, of which Fig. 4 is a sectional representation. In this a cylindrical chamber is screwed on to an opening in the pipe, and a small aperture in the top of the chamber serves for the escape of the air, while a cylindrical copper float placed in the chamber, with a quantity of soft leather attached to its upper extremity, rises as to close the aperture as soon as water enters the chamber. Whenever the pressure of the water in the pipe is considerable, such an apparatus should be fixed a little beyond the highest part of the bending, as the water will force the air forward in the pipe; and to insure the removal of all the air, it is sometimes necessary to make the air-box or pipe communicate with the main at more than one point.

In addition to the authorities quoted in the body of this article, some information has been derived from Barlow's Treatise on Machinery and Manufactures, forming part of the Encyclopaedia Metropolitana; from Ree's Cyclopaedia, articles 'Pipes' and 'Water'; and from Robison's treatise on Waterworks, in the Encyclopaedia Britannica.

As an appropriate appendix to an article on Waterworks, we here present, from the latest complete returns published by parliament, a tabular view of the operations of the several companies by which the metropolis is supplied with water, about the year 1834. As will be seen by the notices of some of the more prominent improvements in the body of this article, very much has been done since that time to improve the supply, and at very great expense; but the cost of water to the consumers has not
generally been raised, the companies looking for their re-
muneration to an increased and constantly increasing ex-
tent of custom. These returns show the quantity of water
supplied by the eight companies named to have been
about 235,914,761 hodgesheads annually; this enormous
quantity being distributed among 191,066 houses, factories,
and other buildings; the individual supplies to each vary-
ing from 100 to 350 gallons daily.

Table showing the Number of Houses, Quantity of Water, &c., supplied, by the Metropolitan Water Companies, according to Returns made to Parliament in 1834.

<table>
<thead>
<tr>
<th>Name of Company</th>
<th>Houses and buildings supplied</th>
<th>Total quantity of water supplied annually</th>
<th>Average daily supply per house or building.</th>
<th>Average rate of water per annum.</th>
<th>Highest elevation at which water is supplied.</th>
<th>Gross rental.</th>
<th>Estimated expenditure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>New River</td>
<td>70,145</td>
<td>114,650,000</td>
<td>131</td>
<td>1 8 13</td>
<td>145</td>
<td>900</td>
<td>43,007</td>
</tr>
<tr>
<td>East London</td>
<td>46,421</td>
<td>37,810,594</td>
<td>130</td>
<td>1 4 17</td>
<td>148</td>
<td>900</td>
<td>43,007</td>
</tr>
<tr>
<td>West Middlesex</td>
<td>16,000</td>
<td>20,000,000</td>
<td>80</td>
<td>1 0 13</td>
<td>96</td>
<td>900</td>
<td>43,007</td>
</tr>
<tr>
<td>Chelsea</td>
<td>13,892</td>
<td>15,753,000</td>
<td>115</td>
<td>1 5 13</td>
<td>135</td>
<td>85</td>
<td>22,900</td>
</tr>
<tr>
<td>Grand Junction</td>
<td>8,780</td>
<td>21,702,567</td>
<td>262</td>
<td>2 0 13</td>
<td>225</td>
<td>85</td>
<td>22,900</td>
</tr>
<tr>
<td>Lambeth</td>
<td>16,992</td>
<td>11,986,500</td>
<td>100</td>
<td>0 15 13</td>
<td>80</td>
<td>900</td>
<td>43,007</td>
</tr>
<tr>
<td>Vauxhall (or South London)</td>
<td>12,046</td>
<td>7,000,000**</td>
<td>55</td>
<td>0 10 13</td>
<td>50</td>
<td>900</td>
<td>43,007</td>
</tr>
<tr>
<td>Southwark</td>
<td>7,100</td>
<td>7,000,000</td>
<td>156</td>
<td>1 1 3</td>
<td>60</td>
<td>38</td>
<td>7,950</td>
</tr>
</tbody>
</table>

WATERFALLS. In the article VALLEYS we have
arranged a general view of the main features of the earth's
surface, and a series of inferences touching the forces
whereby the diversified forms of hills and valleys have been
formed. It is natural to suppose that these features, on the
scale they appear permanent, because the great modifying
agents which produced them have passed away, are
really undergoing continual change from causes in daily
operation, and the most gradual one is that adopted by the
water. But incessant water, flowing down the river,
and reaching it by the depression of the land, is the
primary cause of decomposition by the
atmosphere. Rain washes away the diacreation
occasioned by varying temperature and chemical processes;
the hills lose and the valleys gain, and the balance of
decay and renewal of land is thus adjusted only to salt and
the sea in the basin of the sea. Among the pheno-
mena which show this mutability of the supposed
solid land with most distinctness, are interruptions to the general
uniformity of the inclinations of valleys and the even slopes of
hills, and these changes of character points of variation of the intensity of the agencies excited by the slope.
These interruptions of uniformity are all referrible to the unequal
power of resistance which rocks of different hardness, or
dissimilar position, or unequal thickness, or unlike modes of
association present to external agencies. Thus have been formed round the high limestone hills of the northern
counties a series of rocky terraces, not less regular than
the escarpments made by military art; and thus the oolitic
ramparts, and show how tremendous in masses of sand and clays of the broad plains of the clays of the red marls which margin the Severn and the Avon. On
these grand features of the earth's surface the action of the
atmosphere (including chemical and mechanical opera-
tions in its various agencies) is successively exerted; but when the
spread out, as on the slopes of hills, in the limestone dales of the northern counties of England, the waterfalls are daily receding up the
streams, and thus are the falls of Niagara forced con-
tinually further up the river. The process is by no means
certain. Beneath Hardrow Force, in Yorkshire (a fall of 59
feet), the effect since the general valley of the Yore was
occupied by a stream is marked on the north side of the
river by the remarkable line of cliffs above known as the
Avon. But wherever we look the great agencies of
erosion, of the surface of the earth, are continually
acting upon the rocks with power and precision.

WATERFORD, a maritime county in the province of Munster, in Ireland, bounded on the south by St. George's Channel; on the east by the estuary called Waterford harbour, which separates it from Wexford, and by Kilkenny; on the north by Tipperary; and on the west by Cork. Its
length, from east to west, is 52 miles; and its greatest breadth, from the estuary, is 15 miles. It is
watered by the River Suir, by the River Barrow into which of Youghall town, to the county of Clonmel, is 29 miles.
The area of the county, exclusive of the county of the city of Waterford, is 395,630 acres, or 1244 square miles, which
is about equal to the territory of Connemara, and about one-
half of the whole of Ireland. The population, in 1811, was 149,335,
being 318 to a square geographical mile, which is higher than the mean density of Ireland, but much below that of
several counties in each of the four provinces. The number
of houses, in 1831, was 24,840, inhabited by 30,191 families,
and by above seven persons to each house. The number of
persons to each family was 5.8, and dividing the area of
the county by the number of families there would be 15-6

Not including any allowances for necessary works and improvements, as
expenditures of filtration, &c.,

Excluding of rents for lands, &c., possessed by the Company.

Under 132 gallons per house per day for street washing.
acres to each. Waterford city is 84 miles in a direct line from Dublin, or 93 miles by the road through Carrlow, Castledermot, Ballymore, Kilcullen, Naas, and Rathcoole; in 82° 16' N. lat. and 7° 7' W. long. Hook Tower (light-house) at the entrance to Waterford harbour is in 52° 25' N. lat. and 6° 55' 56" W. long. The county itself lies between 51° 56' and 52° 29' N. lat. and 6° 58' and 8° 9' W. long.

Coast-line.—From Blackball Head, near the entrance of Youghall Harbour, the eastern and northern boundary of Waterford, the general direction of the coast is east for three or four miles, where it trends to the north-east to Helvick Head, the western head of Dungarvan harbour. This harbour does not afford very good anchorage. From the entrance to the coast of Tramore Bay, which has a level beach three miles in extent. The coast is flat, and very dangerous to shipping, as the tide sets in with great force, and with the south-west winds there is a heavy sea. There are bascins on the eastern and western boundaries of Tramore and Dungarvan, a distance of twenty miles, the whole coast is rocky, and often unsafe from the want of shelter. About five miles east is Red Point, the south-western extremity of Waterford harbour; and a mile farther, within the harbour, and a mile from the sea, the port of Dunmore, which has a pier and breakwater, and is the post-office packet station. The width of Waterford harbour is here about two miles. There is a lighthouse on Hook Head, at the entrance of the harbour on the eastern side. There are some remarkable caverns on the coast.

Surface and Geology.—The general character of the county is mountainous. The great mountain-tract which extends from Waterford on the east coast to Dingle Bay, and is bounded on the west, and the south by the parish of Waterford: it is interrupted on a line from Dungarvan to the valley of the Suir, west of Clonmel, by the southern extremity of the great plain which occupies the central part of the county. These mountains occupy the part of the county west of Dungarvan, are among the highest and wildest in Ireland: the height of Monavallogh is 2538 feet above the sea. There are four small lakes in the Cummeragh Mountains, two called Comma Loughs, and two called Youghall Lough; but the sons of the county is only five or six acres: they contain several kinds of trout, and in one eel are found. The Waterford mountains contain two varieties of slate: first, the old transition slate, coloured grey, which is quarried at Glenpatrick, and is much in request for building, and for roofing. The second was a newer slate rests on the older; the lower portions of its strata consist of alternating beds of brownish-red quartz conglomerate and coarse red slate. These strata are succeeded by alternations of red and grey quartz rock, red quartz slate, and grey slate; which beds accumulate and recede farther from the conglomerate, till at length the upper beds produce varieties of purple, brownish-red, and reddish-grey clay-slate, which are known as roofing-slate, particularly in the valley of the river Blackwater near Lismore. These strata undergo successive undulations, the ridges of which have an east and west direction, and the beds almost incline towards the valleys of the principal rivers, and thus form troughs, which are filled by indurated sandstone and secondary limestone, whose strata rest conformably on the clay-slate. The new slate series contains abundance of marine and even vegetable organic remains. The limestone in the counties contains all the fossils of the carboniferous period. The work is to make the alternate beds accumulate with the lower beds of the limestone, also contains fossils similar to those found in the limestone. The subjacent sandstone frequently contains coal-marks, and other vegetable remains, resembling those which occur in the Coal Measures. The strata are much reddened, for the are at times red, and in the intervals of undu- Like the slate district contains several copper and lead mines, some of which, as at Knockmahon, are worked: valuable non-ore is found at Minehead and Ardmore, and at the latter place copper and lead also. Chalybeate and vitric springs exist in several parts of the county.

Hydrography and Communications.—The Suir, which rises in the north-east of Tipperary, after being joined by the Nier, from the Cummeragh Mountains, forms the boundary-line between Waterford and Tipperary and Kil- kenny. The united waters of the Suir and Barrow form the estuary called Waterford Harbour. The Suir is navigable for large vessels up to Waterford city, and to Carrick-on-Suir for those of which the draught does not exceed seven feet. The Barrys, the channel by which the produce of Tipperary, Kilkenny, and the western portion of Waterford are exported. The Blackwater, which rises in the Kerry mountains, enters the county on the west, and runs due east to Cappoquin, where it turns southward, and forms a part of the eastern boundary of Youghall Harbour; after receiving midway the river Bride. The Blackwater produces vessels of a hundred tons to its confluence with the Bride, and for vessels of seventy tons as far as Cappoquin. The Bride, a sluggish stream, is affected by the tide for a short distance, and is navigable for small craft. From Cappoquin to Lismore there is a three miles long, made at the expense of the duke of Devonshire. The Leckey, Brecy, Colleigh, Mahon, Phinsk, Clodagh, and some others, none of them of importance, except for drainage, fall into the sea at various points of the southern coast.

The mail-coach road from Dublin to Waterford, 75 miles, enters the county within two or three miles of Waterford city. The mail-coach road from Waterford to Cork, 87 miles, passes through the county. The, Cappoquin, Lismore, and Tallow, between which place and Yougall it leaves the county, but again touches Waterford before it finally leaves the county a short distance before reaching Youghall. The other roads are—Dungarvan to Newmarket, seven miles; Dungarvan to Youghall, through Pilltown, both over the mountains; one from Cappoquin to the mountains; one from Waterford to Tramore. The above are the roads of importance. There are several places north-north-east or north-west of Waterford left the coast of Waterford, except the Limerick mail-coach road, which runs within the county to Carrick-on-Suir on the Waterford bank of the river, and from Carrick to Clonmel on the Tipperary side.

Agriculture and Condition of the People.—It is estimated that 353,000 acres are cultivated, and 118,000,000.

The estimated rental for the county averages about 12s. 6d., including extensive districts which scarcely produce anything, except for drainage, and are altogether unproductive. Waterford is the principal dairy county in Ireland. A large part of the best land is occupied in dairy-farms, and the Waterford butter bears a high character. When Arthur Young visited Ireland sixty years ago, not one farm was enclosed. The produce of the county is now much larger. The Appendix P. to the Irish Poor-Law Inquiry, contains the result of inquiries both into the state of agriculture and the condition of the people in the baronies of Decies-without-Drum and Mid- dleham; and the following information is chiefly derived from this source.

The barony of Decies-without-Drum contains a large mountainous district, with a great breadth of low uniform ground extending from the flood of the river Blackwater to the flood of the river Barrow, a distance of about seven miles. The thin soil on the mountains affords a very moderate pasture to sheep and store cattle; but descending to the more level land, where the soil is deeper and better, attempts are made to bring it into cultivation; and though some wheat is grown, yet, from its elevated situation, oats are the most suitable crop. The fences on these reclaimed lands are very imperfect, and cattle and sheep cannot be kept out of the corn-fields without herding. There are facilities for the erection of dry stone walls, but the general practice is to make the fences of these land, in the Report of the Railway Commissioners.)

The clay-slate district contains several copper and lead mines, some of which, as at Knockmahon, are worked: valuable non-ore is found at Minehead and Ardmore, and at the latter place copper and lead also. Chalybeate and vitric springs exist in several parts of the county.

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spring food. The sheep are a cross of the Leicester; the pigs of an improved kind; but the greatest attention has been paid to the breed of horses, which are superior in most points to those in other parts of the south of Ireland, and very active strong animals may frequently be seen in the common country carts. A better description of agricultural implements has been introduced within the last few years, such as iron Scotch ploughs and double harrows. A great many farmers use rollers, but winnowing-machines are only used by the largest landholders, the corn being commonly winnowed by women in the open air: the old single heavy harrow is still used by the majority of farmers. The greater part of the barley is held under lease, the tenant depending upon lives, and running from twenty to fifty years before they fall in: the farms are rather above an average size for the south of Ireland. In all recent leases clauses of non-alienation and non-subletting have been introduced. Rent is paid either in the form of a tithe of butter and pork than, or in England, on cash. There is a large field for the profitable employment of labour in road-making, draining land, improving fences. The statement of the farmers in the barony is that they employ one man to every thirty or forty acres under the plough; a much smaller proportion of land than in England gives employment to one man; but this labour costs only 1s. 5d. in Ireland, and between 3l. and 4l. in England.

In the barony of Middlethird, which the assistant commissioner said, it is stated that an experiment is about to be tried, whether it would be more profitable for the dairy farmers to make cheese instead of butter. Conacre, in the barony of Decies-without-Drum, is called "dairy-ground;" the farmer ploughs and manures the land, which is let to an acre, and the labourer and his family do all the other work; the rent, either money or labour, being paid before the crop is allowed to be taken from the ground. There is often a difficulty in getting regular labourers, unless potato-ground is given to them. The usual rotation of crops in the barony of Middlethird is potatoes, wheat, potatoes, oats, and grass-seeds; but the smaller farmers often take two corn-crops together. Out of 2,049 acres, 20 acres were under tillage, including 227 under five acres, and only 101 exceeded 50 acres.

The general state of the peasantry is said to be very curious, ranging from the height of sixty feet.

CLOMNEAL.

Dungarvan is a post-town, 23 miles west-south-west from Waterford, situated in the bay or haven of Dungarvan, on the estuary of the river Colligan, which is crossed by a fine bridge of one arch, built entirely at the expense of the Duke of Devonshure. Part of the town is north and west of this river, and parts of it, especially the market-place, is called the Abbey Side, from an abbey which was formerly there. Dungarvan is an old seaport, and was incorporated in 1463. Within the walls of a castle, built by King John, and now in ruins, the barracks are established. The sciences are for the most part narrow and dirty, but there is a handsome church, a Roman Catholic chapel, and a good market-house. There are two banks, the National Bank and the Provincial Bank. The population, in 1821, was 5105; in 1831, 6217. The inhabitants are chiefly employed in fishing. It is a good deal frequented in summer as a bathing-place. In the year 1833 the exports from the port of Dungarvan were—corn, 97,224 cwt.; provisions, 13,150 cwt.; copper-ore, 28,800 cwt.; all of the value of which was 69,086l., which, with other articles, estimated at 400l., gave a total estimated value of 69,486l. In the same year (1833) the imports were—coals, 357,216 tons; iron, 290 tons; oak-bark or tannin, 129 tons; hemp, 2704. Out of 2219 acres of land, 9877 acres were used for agriculture; 6010 bushes; glass and earthenware, 20 packages; the estimated value of which was 11,012l., and with other articles estimated at 5300l., gave a total estimated value of 16,312l. The amount of the excise duty on malt was 540l.

The town is 24 miles west of Dungarvan, 17 miles south of Waterford, and 24 miles north of Lismore. It was 235l. in 1831; the estimated value of which was 98,514l., which, with other articles, estimated at 400l., gave a total estimated value of 101,986l. It was inhabited by fishermen and pilots, five or six miles below Waterford, and about the same distance from the mouth of the river.

Portlaw, a neat little post-town to Waterford, is a landing on the west bank of the Suir, or rather of Waterford Haven, opposite which is a safe roadstead where hundreds of vessels of large burthen may anchor in safety. The village, which consists of two streets, is near the town of Waterford, and about six miles below Waterford, and about the same distance from the estuary of the river.

Mayfield, a village in the neighbourhood of Waterford, has an extensive cotton manufacture, which employs about 1000 persons. The calico market is not only in the town, but to some extent in England.

Passage, distinguished as East Passage, is a defensive post on the west bank of the Suir, or rather of Waterford Haven, opposite which is a safe roadstead where hundreds of vessels of large burthen may anchor in safety. The village, which consists of two streets, is near the town of Waterford, and about six miles below Waterford, and about the same distance from the mouth of the river.

Lismore, a small but neat and regularly-built town on the river of Lismore, about nine miles south from Waterford, is much more esteemed in this part of the county than any other place; it is said to be a bathing-place, the beach being very firm and convenient for the purpose. The bay is very dangerous for shipping; it is sometimes mistaken for the bay of Waterford, and shipwreck by the occasion. The town has a church, a chapel, a market-house, and an assembly-room.

Tramore, a small but neat and regularly-built town on the south side of the river Tramore, about nine miles south from Waterford, is much more esteemed to be a bathing-place, the beach being very firm and convenient for the purpose. The town is a fishing village, and the number of fishermen now returned is two for the county and one for Dungarvan.

The county is in the dioecese of Waterford, which is a joint see; the dioceses of Cashel, Emily, Lismore, and Waterford are in the same; the population in 1831 was 28,719, or one in 270 persons. The average number of committals for criminal offences is
under 300, two-thirds of which are chiefly for assaults, riots, and attempts to retreat, and similar offences. In 1836 the grand jury recommended that the assizes and sessions should be held at Dungarvan instead of Waterford. The county gaol at Waterford is one of the best managed in Ireland. The county lunatic asylum is at Waterford. There is no county infirmary. There are fever-hospitals at Waterford, Dungarvan, Lismore, and Tallow; and dispensaries at Cappoquin, Clasheen, Dunmore, Kilmeathomas, Killbarrymeaden, Tramore, Dungarvan, Tallow, Lismore, Ballyduff, Bonmahon, and Drumcannon, supported chiefly by grand-jury presentsments. In 1838 the number of patients relieved by the fever-hospitals and dispensaries was 19,231, of whom 15,739 attended at the different institutions, and 4,062 were attended at their own dwellings. The number of admissions into the fever-hospitals was 775, or 1 in 191 of the total population of the county. On the 1st of January, 1840, the number of patients in the lunatic asylum was 101, but the institution was only calculated for 60.

The following Poor-Law unions have been formed in the county:

<table>
<thead>
<tr>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrick-on-Suir</td>
</tr>
<tr>
<td>Dungarvan</td>
</tr>
<tr>
<td>Lismore</td>
</tr>
<tr>
<td>Waterford</td>
</tr>
</tbody>
</table>

In 1840 there were fifty six schools under the National Board of Education, containing 5807 scholars—3227 boys and 2540 girls: the number of male teachers was 32, and female teachers 19.

The county constabulary (exclusive of the city) consisted, on the 1st of January, 1843, of 1 county inspector of the second class, 4 sub-inspectors of the first class, and 2 of the third; 1 head constable, first class; and 6 of the second class; 47 constables, 191 sub-constables, first class, and 28 sub-constables, second class. The expense of this force for 1842 was 8383£. The amount of grand-jury presentsments for the year 1839 was as follows:

- New roads, bridges, &c. | £4,456
- Repairs of ditches | £6,669
- Court and sessions-house, repairs, &c. | £49
- Other expenses | £968
- Constabulary and payments to witnesses | £2,065
- County officers not included in the above | £2,446
- Public charities | £2,846
- Compensation of government advances | £5,113
- Miscellaneous | £3,246

£29,094

The grand-jury presentsments for the county of the city of Waterford were £39,821.

The manufacturing industry of the county is insignificant. At Waterford there are some large establishments.

Waterford, City.] A few years ago a cotton factory, for spinning and weaving, was established at Mayfield, in which about nine hundred persons were employed. The fisheries might be profitably extended, but the unprotected nature of a great part of the coast is said to discourage this pursuit. In 1836 they employed 101 half-decked vessels, of 1688 tons, employing 565 men; 32 open sail-boats, and 550 row-boats, and 1250 men; making altogether 2156 persons.

History and Antiquities.—Dr. Smith, who in 1745 published an account of 'The Antient and Present State of the County and City of Waterford,' states, on the authority of Plutarch, that the Menapii, a Belgic colony, were the antient inhabitants of Waterford and the adjoining county of Wexford. The Desii, from the county of Meath, were a powerful clan at the period of the English invasion, when their importance was nearly destroyed. In 1717 Henry II. granted the city of Waterford and the adjacent province to Richard Le Poer, his marshal, and by marriage the estates and honours of his descendants came to the Beresford family, who still retain large possessions in the county. The county suffered little during the rebellion in 1798. The city of Waterford was the chief scene of most of the historical events of importance.

Many remains of antiquity are found in the county. At Ardmore is one of the round towers, and there are found in several parts of the county interments, earthworks, P. C., No. 1896.

barrows, and cromlechs. A large double trench, called by the Irish 'the trench of St. Patrick's cow,' may be traced for seventeen or eighteen miles across the Blackwater towards Ardmore; it corresponds with the work called the 'King's Cast;' in the time of Armagh and Down. A second trench runs westward from Capel Curig, in Mountains of Cor. At one period there were twenty-four religious establishments existing in the county, and the ruins of some of them still remain, as at Mothill, Dungarvan, Stradbally, and Lismore. The ancient castles and fortified places were also numerous.

(Smith's History of Waterford; M'Culloch's Statistics of the British Empire; Parliamentary Papers on Ireland.)

WATERFORD, the capital of the county of Waterford, is situated on the river Suir, in the 52° 10' N. lat. and 7° 5' W. long. It is a county of a city, and includes in the boundary of the county 9478 acres on both sides of the Suir. The city itself is entirely on the south bank of the river, and is about a mile long. A noble quay extends for a whole mile through the town, from which the city rises gradually. The situation is very fine, but the greater part of the streets are dark, dirty, and mean-looking. Waterford is about 12 miles from the sea, and vessels of 500 tons burden can lie by the side of the quay, but larger vessels anchor about six miles westward of the quay, opposite the village of Passage. The river is crossed at the upper end of the city by a very long wooden bridge, which opens in one part to allow vessels to pass. The bridge was designed by Lemuel Cox, an American, and was built about 1723. The estuary of the river is nearly of a mile wide; the opposite banks are very beautiful, rising gently with green wooded hills.

The town and suburbs occupy about 883 acres. In the county of the city there are twelve parishes, three of which are entirely agricultural, and nine partly agricultural, and partly occupied by the town and suburbs. In December, 1831, the total number of houses in the county of the city was 3719, of which 3376 were in the city and suburbs, and of these latter 1003 were thatched. The number of houses, of 20. rent and upwards, was 1671. The population of the county of the city, in 1821, was 28,679; in 1831 it was 28,921. The population of the city and suburbs, in 1831, was 26,577, the county part of the population being 2441. Upwards of 25,000 were Roman Catholics.

Waterford has been an improving town for many years, but it will be seen that the increase in population has been very small. It has probably been kept down by emigration. Few very new houses are built. In the worst parts of the town the houses are anything but neat; five or six families are sometimes found living together in a hovel, entirely without furniture, and with nothing but straw to lie upon.

The principal public buildings are—the cathedral, an elegant modern structure of brick, which is of hewn stone, with a double front, and commands an extensive view across the river into the county of Wexford. There are three parish churches, four Roman Catholic chapels, and places of worship for the Quakers and other sects. The other public buildings are—of tourist, from an exchange, a custom-house, a theatre, an assembly-room, barracks, and a gaol. Among the charitable institutions are a house of industry and an hospital for the poor.

Waterford, before the Reform Act, returned one member to parliament. It has returned two members ever since the Reform Act of 1832. The present number of electors is 900 freeholders and 900 freeholders.

The assessments in the town only were, in 1830—£2054. 8s. 7d.

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cess, 720. - ministers' money, 248L; lighting cess, 770L; the total amount raised by these assessments being £158L, from about 1800 ratepayers. The grand-jury cess 'evicted' on the county of the city, in 1830, was 434l. 14s. 10d., but the amount of this assessment varies considerably in different years.

The vicinity of Waterford is chiefly with England, and consists for the most part of agricultural produce, butter, pork, &c., and, since the introduction of steam-vessels, of live-stock. The exports from Waterford, in 1835, were corn, meal, and flour, 1,933,854 cwt.; potatoes, 20,048 cwt.; sugar, 165 cwt.; copper-ore, 48,000 cwt.; teathers, 1040 cwt.; wine, 5,402 gallons; beer, 170,000 gallons; cotton manufactures, 180,200 yards; calk-skins, 6400; cow and oxen, 4410 head; horses, 242 head; sheep, 3536 head; swine, 7438; mutton, 7638. Pig-killing, which, added to other articles estimated at 77,700L., gave an estimated value of 1,821,245L.

The imports for the same year (1835) consisted of a great variety of articles required for purposes of trade and general consumption, the total estimated value of which was 1,274,154L.

According to a Return to the House of Commons, dated March, 1842, the number of vessels above 50 tons burden, registered at Waterford, was 115, the total burden of which vessels was 31,400 tons. The number of vessels registered at the town for the year 1841, was 183,510L. 15s. 3d.; the net receipt for the previous year was 161,752L. 5s. 5d. There was a packet station at Waterford for conveyance between Waterford and Milford daily; the number of packets is five, which are kept up at an average expenditure of about 14,000L. a year, the amount received from passengers being about 1700L. a year.

In 1835 there were seven steam-engines in Waterford, equal to ninety-horse power, for manufacturing purposes. In 1836 there were 339 cotton power-looms.

The amount of excise duty on malt, collected in Waterford in 1836, was 9840L. 3s. 6d., for 76,182 bushes of malt.

The annual income of the Provincial Bank in Ireland, and the Branch Bank of Ireland. There is also a savings-bank, in which the number of depositors on the 20th Nov., 1842, was 3469. The expense of management for the year 1841-2 was 270L., including 242L. salaries. The smallest sum on which interest is allowed is 15L. In some English savings-banks interest is allowed on 2s. 6d.

The newspapers are—the Waterford Weekly Chronicle, the Waterford News-Letter, weekly; the Waterford Mirror, three times a week; and the Waterford Mail, twice a week.

In 1840 an act was passed for a railway between Limerick and Carrick-on-Suir, passing through Waterford; but the act was not carried into effect, and has expired.

Waterford was originally founded by the Danes about A.D. 850, and it was their chief possession in Ireland for some centuries. In 1170 it was taken by assault by Strongbow, one of Pembroke; and in the following year Henry II., when he passed to take possession of Ireland, then newly conquered, landed near Waterford, and paid a visit to the town, which was afterwards restored and enlarged by Strongbow. Waterford received its first charter from King John, who resided there for some time; and when, in 1214, on account of its distance to the English, gave it several other charters and privileges, especially Henry VII., for its opposition to Simbel and Perkin Warbeck. All its charters however were seized and annulled by James I., on the ground of the nonconformity of the chief magistrates, and Waterford remained without a charter from 1617 to 1629, when a new and more extensive one was granted by Charles I., which is the one now in force. The immunities granted by this charter were very great, and included, among others, an exemption from the payment of duties of poundage. Waterford was unsuccessfully taken by Irish Carthaginians, and included, among others, an exemption from the payment of duties of poundage. Waterford was subsequently besieged by Cromwell, but

WATERING, in Horticulture, the process of applying water artificially to plants. Water in a greater or less quantity is necessary to the existence of the whole vegetable kingdom: not only do the elements of water enter into the composition of the tissues of plants, but by its agency the various saline ingredients, as well as certain gases that enter into the composition of vegetable tissues, are carried into the plant. Water also exerts an influence on the temperature of the soil and of the plants to which it is applied. It is on these accounts that the application of water to plants is an important process in horticulture, more especially when carried on in the open air. Plants require little moisture, as the processes of life are at that period very inductive, but at the same time a small quantity is required in order to meet the demands of approaching activity. If plants are supplied with too much moisture, the whole plant is enfeebled. The largest supply of water is required when plants are growing rapidly and at the season when they are putting forth their leaves. When plants have ceased to grow, or when the leaves and flowers are falling, the water required by the plant is very much reduced; for, however the object in the culture of plants is to render either their leaves or fruits as succulent as possible, they should be supplied with abundance of water. This is done with spinach, lettuce, and other oleraceous plants, and by this means their leaves are rendered more tender, the plants are grown more quickly, and those parts of the plants, which are often disagreeable, are dulled. The same thing is done in the cultivation of the strawberry, where the object is to render the fruit as large as possible. In this case however the large size of the fruit is always obtained at the expense of its flavour. Even plants bearing succulent fruits, as the melon, &c., may be over-watered, and the flavour of their fruit quite destroyed. In supplying water to all plants due regard should be had to temperature, as, for example, plants which require much water in cold weather, require less in hot weather. Watering in the open air is not often more productive of disadvantage than of real service to plants. When plants are watered naturally, the whole air is saturated with humidity at the same time as the ground; this is not the case when water is supplied under artificial agencies, as by means of the water added, the air is not so strongly charged with moisture, and the plants do not grow as fast as when watered artificially. This operation is usually performed at dry weather, and must necessarily be very limited in its effects; it can have little if any influence upon the atmosphere: then the parched air robs the leaves rapidly of their moisture, so long as the latter is abundant; the roots are suddenly and violently excited, and after a short time the exciting cause is suddenly withdrawn, by the momentary supply of water being cut off by evaporation, and by filtration through bibulous substances of which the soil usually consists. Then again, the plant is not supplied with water, and is excited to the effect of lowering the temperature of the earth, and such a lowering does not take place when plants are refreshed by showers, because at that time the dampness of the air prevents evaporation from the soil just as it prevents perspiration from the body. Much evaporation of water upon the surface has, after a little while, the effect of 'puddling' the ground and rendering it impervious, so that the descent of water to the roots is impeded, whether it is communicated artificially or by the fall of rain. It is therefore doubtful whether artificial watering in the open air is advantageous unless in particular cases; and most assuredly, if it is done at all, ought to be much more copious than is usual. At the same time the practice is at present very general, and there are some advantages in it, independent of supplying plants with water, which is frequently very effectual for removing insects from the leaves of plants, and also for removing dust and dirt in

Inglis's Journey Throughout Ireland, 1834; Barron's Tour Round Ireland, 1835; Report on the Parliamentary Representation of Ireland, printed June 8, 1832; Second Report of Commissioners on Railways in Ireland, 1838; various Parliamentary Documents.)
exposed situations. Mildew is also prevented in annuals by abundant watering. The fungi which produce or are found on mildewed peas, and those which destroy the stalk and onion, may be removed by abundant watering. Where the leaves of plants are injured, this should never be done whilst the sun is shining upon them, as this increases the evaporation, the evils of which have been already spoken of. The morning and evening are the best times for watering these plants. If, in the middle of the day, the roots alone should be watered. After transplanting, whether of young or old plants, in pots or in the open ground, the watering of the plant is always recommended.

In those several instruments are made use of as the engine, the syringe, and the watering-pot. These are made either to throw water through tubes of various sizes so as to apply the water to a particular point, or by means of a rose which is appended to the tube to distribute the water over the plants. Where the water is applied to the roots of the plant are to be watered, and the latter when it is wished to wet the whole surface. Where a stream can be made use of, an effectual way of watering plants is to have a sluice by which the water of the stream may be let on and off as may be the case, the sluices are usually made of a paper.

This is the best mode of watering water-cresses and other plants requiring abundant moisture. Where there are water-stocks, pipes are sometimes laid for supplying compartments of a garden. Lawns and plots of grass may be watered in the same way.

WATERING OF LAND. [IRRIGATION.]

WATERLAND, DANIEL D.D., an eminent English theologian, was the son of the Rev. Henry Waterland, rector of Wesely or Walsley, in Lincolnshire, where he was born in 1705. After his education at the free school of Lincoln, he was admitted to Magdalen College, Cambridge, in March, 1699, obtained a scholarship in December, 1702, and was elected a fellow in February, 1704. Continuing to reside at the university, and to act for his father in his pastoral charge, 'he resided at Cambridge until the 3rd year of his above 21st year, when he was admitted to the degree of A.B. and continued his studies at the university, and obtained a degree of B.D., in which he was sometimes honored at Oxford.

Dr. Waterland appears to have first come forth as a controversialist in 1718, in an answer to Dr. Whitby's last examination on Bishop Bull's 'Defence of the Creed,' and 'An Answer to Dr. Whitby's Reply' to that attack. In 1719 he handled the same subject with more elaboration and effect in 'A Vindication of Christ's Divinity, on which occasion he greatly distinguished himself, by the defence of his theory, the rights of the Church, and the subject of his first book 'In Answer to a Young Student,' under the name of a degree of D.D., in which he was sometimes honored at Oxford.

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(Houbraken, Schouburg der Nederlandsche Konstchil- ders, &c.; Bartsch, Peintre Graveur; Huber, Manuel des Artistes, &c.)

The Thames, one who rows a boat on a river for the conveyance of passengers. The only large body of watermen in England are those employed on the river Thames at London. Before the introduction of coaches they were a very essential class for the conveyance of persons not only between London and Westminster, but London and Gravesend, and up and down the river to the various places on each side. The Thames was then the great highway. Stairs and watergates were numerous on the north bank from London to Westminster, where the many palace gates of the court having its landing-place, its barges and wherries, and its private retinue of watermen, or bargemen, as they were then commonly called. Processions on the river, water-tournaments, boat-races, and other aquatine amusements were frequent, near London, and the fare for a passenger, with his truss or farthell, from London to Gravesend or Milton, was 2d. Stow computes that there were as many as 2000 boats in his time, that there were 40,000 watermen on the rolls of the Watermen's Company, and that in 1796, according to 100 men for the fleet. Doubt he included in this large number the private watermen of the court and the nobility. John Taylor, the 'water-poet,' as he styled himself, complains bitterly of the increase of watermen: 'I don't think the new against augmenting the number of persons of worth or quality, but only against the caterpillar swarm of hirelings. They have undone my poor trade whereof I am a member.' Since that time the increase in the number of bridges and the introduction of steam-boats have still more reduced the number of watermen.

An apprenticeship of seven years on the Thames constitutes a free waterman. The watermen and lightermen are an incorporated company, founded in 1585, and dependent on the corporation of the city of London. They are regulated partly by their own by-laws and partly by the 7 & 8 Geo. IV., c. 75. The monopoly of labour held by this company is very extensive, embracing the whole of the river navigation from Staines to Yantlet Creek, with the exception of certain flat-bottomed ferry-boats and barges above Kingston, no person can ply in a boat for hire on the Thames who is not a member of the Watermen's Company.

The number of free watermen is between 4000 and 5000. In 1796, according to the Report of the Dock Committee, the number of free watermen was 8283. The number of boats licensed to carry passengers was 2728 on January 1, 1836. (Appendix to Report on the Port of London, p. 233.) The Trinity House Corporation share to some extent in the monopoly of navigation of Yantlet Creek, having the power to license certain king's seamen, besides pilots, to ply on the river; but the licences granted by them are under 200.

The act 7 & 8 Geo. IV., c. 75, for 'the better regulation of watermen and lightermen on the river Thames between Yantlet Creek and Windsor,' the court of aldermen are to fix the fares that may be taken for the conveyance of passengers; every waterman who shall demand and take for his fare more than is allowed, is to forfeit for every offence not exceeding 40s.; lists of fares are to be painted on boards and affixed at suitable plying-places; every waterman is to have a printed list of the fares in his boat, and if he shall refuse to produce the same, or not produce it, he shall be examined, and if the pawning be discharged from his fare, and the waterman shall pay for every offence not exceeding 5l.; the number of the boat and the name of the owner are to be painted on the boat; and a waterman wilfully avoiding a passenger, or having or using abusive language, is liable to a fine not exceeding 5l. Complaint may be made within thirty days after the offence to the lord-may or any justice within his jurisdiction. For other regulations less interesting to the public we refer to the act itself.

The Thames watermen have recently established a steam-boat company, in which any free waterman may be a sharer, but no other person.

A very handsome set of almshouses have been built on Penge Common, for 'poor, aged, decayed, and maimed free watermen and lightermen on the river Thames.' According to the statement made at the Anniversary meeting in June, 1843, forty-one houses had already been erected, the cost of which was 12,500l. of which 14,000l. had been raised by a debt of 1500l., towards which 1200l. was collected at the meeting.

(Knight's London, 'The Silent Highway;' Westminster Review, May, 1843; Act 7 & 8 Geo. IV., c. 75.)

The textile fabrics, whatever be their character, are pervious to water from two causes, viz., the existence of minute spaces between the individual fibres of the yarn, whether of silk, cotton, wool, or flax; and the rectangular meshes consequent on the twining of the threads. To close up these minute channels, as likewise the pores of leather, so as to impart a 'waterproof' quality to the material, has been the object of a large number of patents within the last twenty years, as likewise of recipes which have not been patented. Some of the former are large in number, others are subdivided, viz., 1, solutions into which the cloth is dipped; 2, varnishes applied to the surface; 3, interlayers of caoutchouc composition; 4, waterproof composition for leather.

1. In 1835 Mr. Hellewell, of Salford, took out a patent for a distillation, whereby the result was to render the leather, and other fabrics waterproof. According to this plan, for a quantity of woven material equal to 1000lb. weight, there are used 120lb. of rock alum, 80lb. of common whiting, and 300 gallons of water. This mixture is intended, by the chemical action of its ingredients, to yield a solution of alumine, with which the cloth is saturated. After the saturation, the cloth is passed quickly through a vessel containing a solution, at a temperature of 100° Fahr., of 40% white soap; water; the subsequent washing 9lb. of soap and 30 gallons of water to 50lb. of cloth. This laudable, according to the patentee's description, is for the purpose of fixing the alumine in the interstices of the cloth, and enabling it to resist the action of water. The cloth is finally washed, to free it from any impurities.

Mr. Hall, of Doncaster, patented in 1839 a method of waterproofing cloth by immersion. He describes two kinds of solution employed for this purpose: 1st, two ounces of pulverized alum are dissolved in a pint of distilled water; 2nd, one ounce of powdered alum in an ounce of half-pint of water, and another ounce of water; and the two solutions, together with two fluid dsnams of acetic acid, are mixed together, and allowed to settle. The supernatant liquor constitutes the required agent: 2nd, one ounce of dry white-lead is rubbed down in half a pint of water; one ounce of pounded alum is dissolved in another half-pint of water; and the two solutions, together with two fluid dsnams of acetic acid, are mixed together, and allowed to settle. When the cloth has been immersed in the supernatant liquor resulting from either of the above solutions, it is passed through a vessel containing the other agents, and is thus covered with a solution of boiled Irish moss, which acts as a mucilage.

There are other patents of a somewhat similar character to the above, and there have also been methods published which are not patented. Of these, one more example will suffice—the half an ounce of white-lead, or soft water till dissolved; dissolve one ounce of alum in two pounds of water; dissolve a quarter of an ounce of white soap in a pound of water; strain these solutions separately through linen, and then mix them together. Heat this to a boil, and fill it with another quarter of an ounce of white soap; then brush the cloth and paint it to the 'wrong' side of the cloth, on a flat table. When dry, the cloth is brushed, and then brushed again lightly with water. The intention of this process is to render the cloth impervious to water, but not to air.

2. The surface-application of varnish, as species of varnish has been the subject of many patents, which may be illustrated by two or three instances. About twenty years ago Messrs. Mills and Fairman introduced a composition, formed of glue, 40lb. of pig, and a small quantity of burnt umbel, which, when boiled over wooden frames, when the surface was thoroughly dried and the surface was similarly treated. This was not intended as a waterproof composition for ordinary clothing, but rather for tabletops, awnings, coach tops, boats, cloaks, and other coarse materials.

Mr. Newberry's patent, taken out in 1840, is for a mode
of applying water-proofing composition in such a way as to leave one side of the woven fabric free from its influence, thereby rendering the other side a texture nearly resembling that of ordinary cloth. The method consists in saturating the cloth with the waterproofing composition, and exposing one surface only, in such a way that the atmosphere, or artificial heat, may harden the composition on that surface into a good, impervious coating; while the other surface, being kept moist during the drying of the first, is cleansed from the composition by means of spirit of turpentine. Mr. Newberry describes three modes of effecting this object. In the first mode the cloth or woven fabric is stretched over a frame, and after being saturated with the composition, is allowed to float on a layer of oil till the upper surface is dry; after which the lower surface is cleansed from the composition. In the second mode the cloth is stretched double, or in two plies, over a frame, saturated with the composition, and then, when dry, the exterior surfaces, the contact-surfaces remaining moist until the time of removal. In the third mode recourse is had to a roller, on which the cloth is coiled, and a flat surface, stone, varnished wood, or other substance non-absorbent, to the composition. The table is covered with a layer of the composition, and the cloth, being uncoiled and laid down upon it, is pressed and rolled till every part becomes wet by the composition beneath. In this way the upper surface may be cleansed while the lower one is dried. The whole is then exposed to a drying process. Mr. Newberry's patent relates rather to the mode of proceeding than to the kind of composition employed.

3. The application of a layer of cement, gum, or varnish between two layers of substances, was deemed to render the inner one impervious to water, has been practiced under many different modifications, including that which is known by the name of the inventor, Macintosh. In the year 1824 Mr. Weise of Bermondsey devised a peculiar kind of waterproofing for cloth, which was patented under consideration. This fabric was to be used either as a material for hats and bonnets, in lieu of the usual felted beaver, or as a cloth for other garments. The materials consisted of beaver-fur, musk-fur, hare's wool, Spanish wool, flax, hemp, and the upper surface of the cloth was covered by a mixture of tallow, plant-resins and other materials, to render the fabric impervious to water. The patentee states that the cloth may be washed without fear, or at least not requiring the ordinary process of washing. It was used in Italy during the last century for making cloth. In 1830, Mr. Hancock, in the year 1830, besides describing a mode of applying a layer of caoutchouc-solution to the external surface of cloth, patented a peculiar kind of water-proof material. This consists of fibres of cotton, silk, flax, or hair, mixed up with caoutchouc. The fibres are cut to about an eighth of an inch in length, and then incorporated with the gum, in the proportion of an ounce of the former to 3 ounces of the latter; and colours, if required, may be given to the material by the addition of dry pigments. The mixture is poured out upon a cold tablet, and allowed to harden in form of an extended sheet; and this sheet, after being gently warmed, is rolled or impressed into the surface of the material. Of this material the patentee proposes that boats, shipping materials, boat-coverings, and numerous other articles may be formed; and the proportion of gum to fibre being regulated according to the purpose to which the resulting material is to be applied.

Among Mr. Sievier's ingenious applications of caoutchouc are two or three relating to waterproof cloth, patented in 1833. One method relates to non-elastic cloth. A woven fabric, of cotton, wool, or silk, is in the first instance coated with a solution of turpentine. It is next coated with a mixture composed of caoutchouc, spirits of turpentine, and litharge or some other drying ingredient. While yet wet, the cloth is covered with fibres of wool, cotton, silk, hair, or fur, cut into different sized pieces, and these are pressed into the cloth by rollers or brushes. When dry, the surface is brushed, and those fibres which remain unmoveable form a permanent surface to this double waterproof material. The inventor describes the appearance as being analogous to that of office or Hemp-fabric, according to the kind and number of fibres employed, and states that the cloth may be sheared if a short nap be required. Mr. Sievier proposes to produce multi-coloured patterns, by having blocks cut similar to those used by paper-stainers, floor-cloth-printers, and other manufacturers, by means of which one colour may be varnished ground-fabric by means of these blocks; a portion only will be thus covered, and the remainder is proposed to be covered with fibres of a different colour, applied as in the first method, but which will not adhere at the parts covered with the block-print. A mode is described of employing stencil-plates instead of the carved blocks.

Mr. Sievier's elastic waterproof material is thus formed:—thin sheets of caoutchouc are cemented by a solution of caoutchouc to gauze, bobbin-net, or other open material; and on this, as a ground, and with a similar cement of quick-drying caoutchouc, is laid a stratum of fibres. The fibres are pressed and dressed as in the former instance; but the result of the fabric differs in this, that the lower and external mesh of the gauze is both thin and give to the whole an elasticity which closely-woven textures cannot impart.

4. The attempts to render leather waterproof depend in general on the first attempts of the ancient Egyptians, who have already admitted the tannin, a substance imbibing being such as will repel or resist water. Many such methods have been proposed at different times, of which the mention of a few will here suffice. Melt over a slow fire a quart of boiled linseed oil, a pound of mutton suet, three quarters of a pound of yellow bees-wax, and half a pound of common resin, or smaller quantities in the like relative proportions; and with this mixture saturate the leather of new boots or shoes, while the latter is slightly heated. Another mode is to boil two pounds of bees-wax, two ounces of Burghley pitch, and two ounces of turpentine, in a pint of linseed oil, and with this mixture to saturate the leather; and another mode is to melt two ounces of resin, and half an ounce of white vitriol, to which add four ounces of spirits of turpentine and two ounces of white oak sawdust, and apply this mixture to the leather by means of a brush. 2. Apply a coating of tar to the leather; and after this is dried, apply a second mixture of one part of copalsia balsam with two of naphtha. Another mixture for this purpose consists of six ounces of caoutchouc boiled for two hours in two quarts of linseed or neats-foot oil. 3. Apply a mixture of one part of oil of turpentine to two parts of tallow and one part resin, with
which the leather may be completely saturated, the resin imparting an antiseptic quality to the tallow.

One of Mr. Sievier’s conivances is for rendering leather elastic and waterproof. A thin sheet of leather is cemented to a thin sheet of solid caoutchouc by a caoutchouc solution, and kept under pressure for five or six days. The compound fabric thus formed is nearly inelastic, because the leather has temporarily suspended the elastic power of the caoutchouc; but after the pressure is removed, of a hour’s duration, and that pressure cut to 180° Faris, the caoutchouc partly collapses, and the leather assumes a corrugated surface, similar to Morocco leather. The leather, rendered thus elastic and waterproof, is then manufactured into boots and other articles.

WATFORD [Hertfordshire.]

WATLINGTON [Oxfordshire.]

WATSON, Richard, D.D., was born in August, 1757, at Heversham, near Kendal, in Westmoreland; his father, John Watson, a man of no great property, who had been head master of the grammar-school from 1698: the family, supposed to have come originally from Scotland, had subsisted for at least three or four generations at Handendale, near Shap. His mother’s name was New. Old Watson had great reputation as a teacher; but Richard, who was the younger of his two sons, did not enjoy the advantage of having him for his master; for he had resigned his office in 1757, although he lived till November 1758. His son was a brilliant student, and his successor, who took little pains to give him an accurate grammatical training; and about a year after his father’s death he was sent, on an exhibition of 50l. belonging to the school, to Trinity College, Cambridge, where he was admitted a fellow-commoner November 1767. On his exhibition, to carry him through College, was a sum of 300l. which his father had left him; but he set bravely to work to make his way to independence by hard study and hard living. It is said that at first his dress was a coarse homespun garment of various colours. He offered himself as a candidate for a scholarship, which he obtained on the 2nd of May, 1775. In September following, while still only a junior soph, he began to take pupils, and continued to be so employed, first as an assistant, and afterwards as assistant, till 1776. By October, 1776, he became one of the head tutors of Trinity College. Meanwhile he had taken his degree of B.A. in January, 1759, when he was declared second wrangler (he says himself, he ought to have been first); had been elected a fellow of his college in October, 1783; had graduated M.A. at the commencement in 1792; and in November, 1764, had been, on the death of Dr. Hadley, unanimously elected by the senate to the professorship of chemistry. This was a very chuse position, for at that time Watson knew nothing of chemistry himself, but he did not disapprove the confidence that was felt, by himself and others, in his ardour, application, and quickness of comprehension. With the assistance of an operator, whom he had recommended to him, after immediately employing himself in his laboratory, he acquired such an acquaintance with his new subject as to enable him, in about fourteen months, to read his first course of lectures, which were honoured with a numerous attendance, and proved highly satisfactory. He afterwards delivered other courses, which were equally successful; in 1768 he printed a synopsis of the principles of the science under the title of Institutiones Metalurgicae; in 1769 he was elected a Fellow of the Royal Society, and during some years after this time corresponded with many chemists on philosophical Transactions. In 1771 he published An Essay on the subjects of Chemistry, and their General Divisions; in 1781 he published two vols. 12mo, of Chemical Essays; a third appeared in 1792; and a fourth in 1796 containing an account of an apparatus which has always been very popular. But Watson’s first publication, properly so called, was An Assize Sermon, preached at Cambridge, 4to, 1769. About two years after this, in October, 1771, he was unanimously elected to the distinguished office of regius professor of divinity, although he was at the time neither D.D. nor B.D., and in truth seems by his own account to have known little more of divinity than he did of chemistry seven years before. But such was his good luck, or the reputation he had established for carrying his object, whenever he took one in hand, that no other candidate appeared. The professorship when he got it was worth about 330l.; but he boasts of having raised it to more than three times that value. Not that he ever had any pretensions to call himself a learned theologian: on the contrary, he was rather vain of being spoken of as the Professor aureōrdænsis, the self-taught professor, or rather the professor who was indebted for what he knew neither to masters nor books. His constitution was, he says, ‘ill fitted for celibacy,’ so in December, 1773, he married the daughter of Sir Edward Williams of Dallam Tower, in Westmoreland; and the next day he went to North Wales to take possession of a sinecure rectory, procured for him by the bishop of St. Asaph by the duke of Northumberland, who, after his death, was enabled (also through means of his grace) to exchange for a prebend in the church of Ely. In 1780 he succeeded Dr. Plumptre as archdeacon of that diocese; the same year he was presented to the rectory of Northwold, in Norfolk, a small living, which, after his death, he left to his son, who afterwards received another much more valuable living, the rectory of Knaploft, in Leicestershire, from the duke of Rutland, who had been his pupil at the university. He was now therefore tolerably well provided for.

Meanwhile his publication not already noticed had been, in 1772, two Letters to the Members of the House of Commons, under the name of A Christian Whig, in support of the clerical petition for the abolition of subscription; in 1773, also without his name, A Brief State of the Business of the Whigs, in which he defended a restoration sermon entitled The Principles of the Revolution Vindicated, which made considerable noise, and, as he conceives, gave great offence at court and in courtly circles; the same year his well-known Apology for the Life of his late father, was published, and was immediately followed by three volumes of sermons and charges. In March, 1792, on the appearance of Soame Jenyns’s Disquisitions on Various Subjects, the toying of which annoyed him, he thought it necessary to defend his whig principles in An Answer to the Disquisitions on Various Subjects, and the present government, and gratifying the duke. Of course Shelburne professed to have selected him from his own discernment of his merits. Let that have been as it may, Watson proved a very unmanageable bishop. Neither Shelburne nor any succeeding minister could ever get him to run in harness. The first thing he did after he found the minute on his head was to publish, in 1782, A Letter to Archbishop Cornwallis on the Church Revenues, recommending an equalization of the bishoprics. This he did in spite of his party, because he said it was a thing which would embarrass the government, and at the same time do nothing to forward his object. And so he continued to take his own way, and was very soon allowed to act without much of the peremptory guidance which might have guided him or stop him. He made some good and effective speeches in the House of Lords, but never originated nor even materially assisted in carrying any legislative measure. For the most part, in general politics, he sided with what was called, the whig party; but he would not come up to vote for Fox’s Indin Bill in 1783, and he had a theory of his own upon the subject of the treatment of the House of Commons by Pitt which followed. On the occasion of the king’s illness in 1788, again, he went with his name in a minority in the House of Commons to the regency, for which it was thought at the time that he had a good chance of the bishopric of St. Asaph, then vacant; but his majesty’s recovery dissipated that along with many more such flattering visions. However before that, in 1786, Mr. Watson, who had been so unfortunate by the death, in 1796, of his friend and former pupil, Mr. Luther, of Ongar, in Essex, who left him in his will an estate which he sold for 20,500l. He grumbled on about having sacrificed himself to his principles, and being overlooked and left in poverty; but he still laboured for his professorship, and his archdeaconry, and his rectory—all, by the bye, as he managed the matter, either out of, or as nearly as possible, sinecures—in addition to the money and the profits of his various publications, his case could not well be expected to excite much commiseration.

What remains of his biography is little more than the
catalogue of his other literary performances. In 1783 he published a useful 'Collection of Theological Tracts selected from various Authors for the Use of the Younger Students in the University,' in 6 vols. 8vo., which went through two large editions. An Address to Young Persons after Confirmation,' which he published in 1783, was already valuable. The great increase in the number of Tracts since the author's death has been introduced in a new edition, with 'Considerations on the Expediency of revising the Literary and Articles of the Church of England, by a consistent Protestant,' another of his adventurous proclamations of peculiar views, which brought upon him a good deal of outside annoyance. Various Charges and sermons were delivered to the clergy of his Diocese in June, 1791, full of vituperation of the Corporation and Test Acts, and laudation of the French Revolution. Upon this latter subject, however, he soon after cooled considerably, as pet содержит, by his next Apology, a sermon published in 1793, which he entitled 'The Wisdom and Goodness of God in having made both Rich and Poor,' and which was expressly directed against the very democratic principles out of which the Revolution in France had sprung. He talks of the 'strange' turn which that great movement had by this time taken, as justifying or accounting for his apparent change of feeling about it; as if it was the course of events that had been in the wrong—not he and his an cient principles, sufficiently distinguishable from modern works, his 'Apology for the Bible, in a Series of Letters addressed to Thomas Paine.' This was followed two years after by 'An Address to the People of Great Britain,' an energetic appeal in support of the war against France. The influence of Khevenhüller's 'Anecdotes of the French Revolution' had from it came from, excited immense attention. Fourteen regular editions of it, he says, were sold, besides many pirated ones. Some years after, in 1803, he published another tract, entitled 'Thoughts on the intended Invasion,' in the same year. His last works, the majority of which were also printed by him from time to time, which need not be noticed in detail. His last publication was a selection of his fugitive pieces, in two octavo volumes, which appeared in 1816, under the title of 'Miscellaneous Tracts on Religious and Moral Subjects,' and were published with his own permission. In the last years of his life he spent mostly in retirement on his estate of Calgarth Park, in Westmorland, which he amused himself in ornamenting and improving by building and planting. He died there on the 4th of June, 1816. He had several children. After his death appeared, under the superintendence of his son Richard Watson, L.L.B., prebendary of Llandaff and Wells, the work from which the above particulars have been principally extracted, entitled 'History of the Life of Richard Watson, Bishop of Llandaff.' written by himself at different intervals, by revised in 1814.'

WATSON, ROBERT, a respectable Scotch author of the age of Hume, Robertson, and Adam Smith. Robert Watson wrote an essay upon the theory and practice of combined the professions of brewer and apothecary. Robert completed the usual courses of languages and philosophy, and commenced the study of divinity in the University of St. Andrews. He attended the Divinity Hall in Glasgow for at least one winter, and finished his theological studies in Edinburgh.

In 1751, Adam Smith having removed to Glasgow, where he had been elected professor of logic, Watson was encouraged by Lord Kames to deliver a course of lectures upon the same subject, the lectures being delivered by Smith. The reception these lectures met with encouraged him to repeat the course every winter during his continuance in Edinburgh.

In 1758, having become a licentiate, or, as it is called in Scotland, an 'ad eundem,' he advertised himself a candidate for one of the churches of his native town, which happened to be vacant. The application was unsuccessful, but Mr. Henry Rymer, professor of logic at St. Salvador's College, entertaining thoughts of retiring from public life, presented a testimonial of the writer's services to the Synod, by the payment of a sum of money, to resign in his favour. The other professors sanctioned the bargain, and elected Mr. Watson professor of logic, and the Crown soon afterwards constituted him by patent professor of rhetoric and belles-lettres, a situation he held with great reputation in the university of St. Andrews, which was that about the same time in Glasgow by Smith and Reid, in Aberdeen by Beattie, and in Edinburgh by Hlayson. He substituted for a course of lectures on logic, properly so called, a course of lectures on the theory of the human mind, on the exercise of the reasoning faculty, and on literary criticism.

In 1777 Dr. Watson, stimulated by the success of Robertson's 'Charles V.,' published (at London), his history of 'Philip II. of Spain.' The work was favourably received in England, and in France, and was translated into Dutch, and German. This success encouraged the author to commence the history of Philip III., four books of which were completed at the time of his death in 1780. A few years before his death he had been promoted to be principal of the university of St. Andrews, the birthplace of Salvador on the death of Principal Tuldewalsh. Watson left five daughters by his wife, who is said to have been a woman of great beauty, daughter of Dr. Shaw, professor of mathematics in St. Andrews college. The four completed books of the history of Philip IV., with two additional, by Dr. William Thompson, were published by that gentleman for the benefit of the author's family.

In a literary point of view the histories of Philip II. and Philip IV. are far inferior to the work of Robertson: they are heavy, not very elegant, and show nothing of a comprehensive or philosophical mind in the author. They are however impartial, but for a slight natural bias of the author in favour of the Protestant party. The narrative is full and minute. The extracts of Historians and of the English critics complain of the parade of military technicalities with which the 'History of Philip II.' in particular is overlaid; and M. de Beaumarchais points out that the transactions in the Spanish colonies, in Naples and Sicily, are carried on without reference to the particular circumstances of the 'History of Philip II.,' but he had not consulted the original authorities, and estimated the work, without reference to its accuracy or elegance, by the quantity of materials which it supplied for his imaginative pictures or political and social speculations.

(Woodhouselee's Life of Lord Kames; Chalmers's Bio graphical Dictionary—Lives of Adam Smith, Blair, and Watson; Preface to the Life of Philip III.; Biographie Universelle—Lives of Philip II. and III., and Watson; Schiller's Abfall der Verantwortung der Geschichte.)

WATT, ROBERT, M.D., is the author of a well-known work, entitled 'Bibliotheca Britannica, or a General Index to British and Foreign Literature,' 4 vols. 4to., Glasgow, 1819-1820; Edinburgh, 1824; a new edition with a few corrections of him in that work (sent to the press after his death) is that he was born in Ayrshire in 1774, that he died at Glasgow 12th March, 1810, that he was president of the Faculty of Physicians and Surgeons of Glasgow, and lecturer at the Royal College of Physicians; that he had published the following works during his lifetime:—

'Cases of Diabetes. Consumption, &c.' 8vo., Paisley, 1808;
'Catalogue of Medical Books,' 8vo., Glasgow, 1812;
'Rules of Life, with Reflections on the Manners and Dispositions of Mankind,' 12mo., Edinburgh, 1813 (anonymously); besides a few papers in the 'Transactions' of the Medico-Chirurgical and one or two other societies. We have found no account of him anywhere else.

The 'Bibliotheca Britannica' is in two parts: the first containing an alphabetical arrangement of authors, with the published works of each in chronological order: the second, a similar arrangement of subjects, with an enumeration of the books treating of them, and references to the entry of each work under the author's name in the first part. The compilation, prepared amid the calls of a professional life and without access to any extensive library, was carried through with great rapidity. In the author's own estimate of the work, there is no doubt chargeable with many positive errors, as well as with important deficiencies; but it is notwithstanding both a remarkable performance for an individual and an aid of very considerable utility in many literary investigations. It cannot be relied upon as an authority, but it is serviceable as a guide or indicator.

WATT, JAMES, 'who,' to adopt the eloquent language of the inscription placed by Lord Brougham upon his statue in Westminster Abbey, 'directing the force of an
works on surgery and medicine. He was found one evening occasion conveying into his room for dissection the head of a child who had died of some unknown disease. Leaving, however, all these studies, Watt, in 1764, took the profession of a mathematical-instrument maker. It is usually stated, without any allusion to preliminary instruction in this art, that he removed to London in 1766, to please himself under Mr. John Morgan, mathematical and instrument maker, of Great St. Mary's Church, near the South-Change. No contemporary memoir published in the 'Public Characters' of 1802-3, states that he was, at the age of sixteen, 'trained as an apprentice to learn the art of an instrument-maker, a sort of business,' it is observed, 'of which we have no idea.' From this Mr. Morgan, whose name is not now common even in Glasgow or other large towns either in north or south Britain.' At that period, we are further informed, 'this profession included the making and repairing of the instruments used in experiment in mechanics and mathematical philosophy; the manufacture, in a rough way, of all kinds of musical instruments, and of theodolites, quadrants, and other instruments necessary for the practice of land-surveying.' The account referred to does not state the place of Watt's apprenticeship, which is said to have been for three years, a period rarely exceeded in Scotland unless for the sake of obtaining certain privileges independent of the mere learning of the trade or profession; but from the narrative of Stuart it would seem that when Watt left his master, he 'took the opportunity of his visits to a maternal aunt at that place,' Watt became interested in the operations of a mechanic 'who eked out a scanty subsistence by making and repairing fishing-tackle, and the simple instruments used by the farmers in weighing and draughting farm produce.' By this means, he had 'the company of a squire, a rascal of fiddles, and a turner of spinets, he was, we are informed, a useful man at almost every thing. He retained nicknacks of many kinds, and through dealing in spectacle-glasses, he was dignified with the title of an optician.' Watt, according to this account, was not interested in Watt's generation, for he remained not quite two years. After this kind of apprenticeship, Watt removed to London, where he acquired his education and his professional knowledge, and where he remained for twelve months, when the distressing headaches thereby occasioned ceased to afflict him. It is also stated, but without any indication where, that Watt was apprenticed to John, a writer to the 'Encyclopaedia Britannica' as the author of the life published in that work, which first appeared, some years since, in the Supplement; but as the dates and other circumstances agree, there does not appear to be any reason why the name should be omitted. His father's name is referred to. The memoir by his son merely states that the desire of improvement in an art then little practised in Scotland, induced young Watt to visit London (according to this account in his eighteenth year), where however he remained little more than two months, when the infirm state of his health compelled him to return to the parental roof.

Shortly after his return from London, Watt endeavoured to establish himself in business in Glasgow, but, owing to his having been a burgess, he was not admitted to the corporations of arts and trades, which considered him an intruder upon their privileges, and refused to allow him to set up even the humblest workshop. From this difficulty he was extricated by the interposition of the authorities of the University of Glasgow, a corporation which, in the twelfth year of the present century, the University offered him an asylum within their precincts, where they permitted him to establish a shop; and they also honoured him with the title of their mathematical-
WAT

Instrument maker. These circumstances happened about the year 1797, when Watt had scarcely attained his twenty-first year; and it appears that he was especially indebted, for the friendship shown by the authorities of the University to the kind offices of Adam Smith, author of the 'Wealth of Nations,' Dr. Black, Robert Simson, the eminent mathematician, and Dr. Dick, professor of natural philosophy. In this profession Watt displayed much ingenuity and manly dexterity; and his superior intelligence led the way to the solution of many difficult problems. Watt was a skillful artist, to form habits of intimacy and friendship with him, so that his workshop became a favourite resort for the most eminent scientific men at Glasgow. His intimate friendship was established with that great man, Dr. Robison, who, resembling in his pursuits the investigations in mathematical and mechanical philosophy, in an unpublished MS. used by Arago, expresses the surprise which he felt when, on being introduced to Watt, whom he expected to find merely an intelligent workman, he found a philosopher, as young as himself, yet willing and able to instruct him, or any of the students who might fall into difficulties. He needed but prompting to take up and conquer any subject; and Robison states that he learnt the German language in order to peruse Leibnitz's 'Treatise of the Form of Steam in the Mariner.' But Robison was a problem on which he was engaged seemed to require it; and that similar reasons led him subsequently to study Italian. Without neglecting his business in the daytime, he had laboured for nights and often worn instruments; and the spirit of inquiry which was a characteristic of his mind, was a most vivid impression, it seems to have recommended to it his indefatigable character. In illustration of this characteristic of his mind, it is related that he undertook and accomplished this book of 200 pages on a subject which has been said to be totally insensible to the charm of music that he could not distinguish one note from another. His instrument was no less remarkable for its harmony than for several important improvements in its mechanical details; and it is believed the piston cylinder was invented by Watt, respecting the theory of temperament in music, a matter then very little understood, and of which he could have gained no knowledge except through the profound but very obscure work published on the subject by Dr. Robert Smith.

The earliest occasion on which the attention of Watt was seriously directed to the properties of steam appears to be that mentioned under STORM-CARRIAGE (vol. xxii., p. 460); and his son states that about 1761 or 1762 he tried some experiments on the form of steam in the carriage of a known as Papin's digestor; and constructed and worked a small model, consisting of an inverted syringe, the bottom of the rod of which was loaded with a weight; alternately admitting the steam into the space between the rod and the atmosphere. Thus he practically demonstrated the power of steam used as in modern high-pressure engines; but he soon abandoned these experiments, and he appears to have entertained a prejudice against the use of his invention in its principal application to a machine, respecting the theory of temperament in music, a matter then very little understood, and of which he could not have gained no knowledge except through the profound but very obscure work published on the subject by Dr. Robert Smith.

The event to which the commencement of his invaluable discoveries may be most distinctly assigned, took place in the winter of 1768-9, when Professor John Anderson, who occupied the chair of natural philosophy in the university of Glasgow, requested him to examine and repair a small model of Newcomen's steam-engine, which could never been made to work satisfactorily. His sagacity led him to discover and remove the defects of this model, which was subsequently used in the class-room; and by this circumstance Watt was impressed by the imperfections of the steam-engine itself, and to investigate those properties of steam upon which its action depended. About this time he left the college and took up his abode in the town previous to his marriage with his cousin, Miss Mitchell, in the summer of 1769. Watt went with Dr. Cleland to endeavour to find the house, near the harbour of Glasgow, to which Watt retired to follow up his important experiments, but found it pulled down, its site being, appropriately enough, occupied for the manufacture of colonial steamboats.

By referring to the article STORM-ENGINE (vol. xxii., p. 474), where the action of Newcomen's machine is described and illustrated by a diagram, it will be seen that its arrangement was made up of two distinct conditions: first, that when the cylinder was full of steam, a degree of coldness should be produced within it that should occasion the sudden condensation of the steam, and thereby produce a partial vacuum beneath the piston, which should cause the atmospheric pressure on its upper surface to force it down, with sufficient rapidity to give motion to machinery for working a pump; and secondly, that immediately after the completion of one stroke the temperature of the cylinder should be again raised to such a degree as to enable it to become refilled with steam preparatory to another stroke. A considerable amount of steam was required, called in by circulating water, for this purpose. Watt perceived that the cylinder was too hot to allow the immediate condensation of the steam just admitted, time was lost in cooling the cylinder; and, thirdly, the loss of heat from this radical defect of the old, or, as it is usually called, the "steam" atmosphere, was three times as much as was applied to the efficient action of the machine. Such was the best, perhaps it is not too much to say, and the only efficient steam-engine used before the time of Watt; and notwithstanding its wasteful expenditure of fuel, it was extensively used for the purpose of draining mines. It was thus applied in the collieries in the north of England, in the tin and copper mines of Cornwall, and in the steam-vessels navigated by the Hudson and Mississippi rivers, and in the steam-machines of Cumberland. Shortly after the middle of the eighteenth century it was applied to the purpose of raising water to turn water-wheels, and it was also used for the working of blast-furnaces for smelting iron ore, and in a few cases for raising water for the supply of towns; but its use was necessarily limited to a small cost of working, as well as by its defective and clumsy construction. Watt perceived that it was desirable, in order to the efficient use of the steam, that the cylinder should be kept hot as the valve opened; and to provide for this he had recourse to the beautifully simple expedient of condensing the steam in a separate vessel, which might always be kept cool, and between which and the cylinder a communication might be opened whenever it was required from the condenser. A certain range being perfected, he next devised means for deriving the fullest possible advantage from it, by maintaining a uniform and high temperature in the cylinder; an object which he accomplished by enclosing its upper part in a jacket, or outer casing, and filling the intervening space between its inner and outer casings with steam, and the exchange of heat between the two is given under STORM-ENGINE. The invention was in its main features completed as early as 1765; and in the course of his early experiments Watt was much struck by the great heat communicated to the injection-water by the steam, and the quantity of steam, a circumstance which led him by further trials to the discovery that water converted into steam would heat about six times its own weight of water at 47° or 48° to 212°. Being struck with, and not understanding the reason of, this remarkable fact, as he himself states in the notes to Robison's "Mechanical Philosophy," Watt mentioned it to his friend Dr. Black, who then explained to him his doctrine of latent heat, which he had taught some time before, although he had neither heard of it, or not attended to it when he thus, to use his own word, "stumbled upon one of the material facts by which that beautiful theory is supported. In order to correct an erroneous statement which had been obtained with regard to its action, we insert a further quotation from the above notes, where Watt observes—Dr. Robison qualifies me as the pupil and intimate friend of Dr. Black, and goes the length of offering to me to have profited to owe my steam-engine to the instruction and information I had received from him, which certainly was a misapprehension. He is also mistaken in his assertion that I had attended two courses of the Doctor's lectures. The following observations upon my steam-engine to the instruction and information I had received from him, which certainly was a misapprehension. He is also mistaken in his assertion that I had attended two courses of the Doctor's lectures. The following observations upon my steam-engine to the instruction and information I had received from him, which certainly was a misapprehension. He is also mistaken in his assertion that I had attended two courses of the Doctor's lectures. The following observations upon my steam-engine to the instruction and information I had received from him, which certainly was a misapprehension. He is also mistaken in his assertion that I had attended two courses of the Doctor's lectures. The following observations upon my steam-engine to the instruction and information I had received from him, which certainly was a misapprehension. He is also mistaken in his assertion that I had attended two courses of the Doctor's lectures.
which had compelled him to establish himself in the pre-
minets of the college, his wife being the daughter of a free-
man. Being thus rendered a freeman himself, he opened
a chandler's shop, and among the increasing business led
him to require the labours of an assistant. The success of
his first experiments induced Watt to determine upon the
construction of a larger model than could be conveniently
and privately constructed at his usual place of business,
and he planned with this view, in 1761, a machine which
had a cylinder of nine inches diameter, and which, as
far as it was worked, proved satisfactorily the practical
importance of his improvements; and as neither his leisure
nor his means enabled him to proceed, the project was for
a time dropped.

In addition to his employment as a mathematical in-
strument maker, Watt devoted much time to the practice
of land-surveying, and this led to the employment of his
superior talents in the more important departments of
civil engineering. Such projects as appear to have oc-
ccupied much of his attention between the year 1765, when
the leading features of his invention were perfected, and
1768, when he found in Dr. John Roebuck, to whom he
had become known as a surveyor, an individual capable
of appreciating the practical value of his invention, and
of sufficiently entering to support him in further experi-
ments. Dr. Roebuck, who is perhaps best known as the founder
of the Carron-works and the vitriol-works at Preston-
pon-Ravens, was engaged in an extensive colliery un-
taking at Kinneil, a few miles from the Carron; and an
outbuilding connected with his residence Watt com-
mented, in the winter of 1768, a third model, on a much
larger scale than either of the preceding. This engine had
a cylinder of block-iron, eighteen inches diameter, and its
construction many difficulties had to be overcome,
raising partly from inexperience as to the proportions
of the several parts, but mainly from the imperfect work-
manship unavoidably during the infancy of the art of machine-
making. Watt arranged the cylinder in the stoutest con-
packing of the piston, which could not be effected, as in
the old engines, by covering it with a body of water.

At length, after eight months' labour, Watt and Roebuck
had the satisfaction of seeing the machine in successful op-
eration. The saving of fuel was enormous; the saving
effected in the supply of water for condensation was little
less important, and the result of the experiment fully sat-
isfied Roebuck, who obtained a share in the patent by
which Watt secured his inventions. This patent had been
applied for in 1765, but not before the expiration of eight
years, and it was obtained on the 5th of January, 1769.*

In the summer of that year however the mining specula-
tions of Roebuck involved him in such embarrassments that
he was obliged to abandon the steam-engine, and Watt himself was therefore obliged to return
to his former avocations as an engineer and surveyor (he
having relinquished the business of instrument-making in
1768), and to such engagements he chiefly devoted himself
until the close of the year 1773. Among the surveys and
engineering works in which Watt was engaged before he
finally devoted himself to the carrying out of his improve-
ments on the steam-engine was a projected canal between
the Forth and the Clyde, by what was called the Lenond
project. Watt was engaged in it, when his attention was
engaged on similar surveys upon a rival line. He also
planned and superintended the execution of a canal for
conveying the produce of the Monkland collieries to Glas-
gow. He was engaged upon the Crinan canal, which was
subsequently abandoned by Roebuck, and Watt himself, and
the river Clyde, improving the navigation of the Forth
and Devon, and the Water of Leven; a canal from Mach-
hiiiian Bay to Campbeltown; another from the Grand
Canal to the harbour of Borrowtounness; improvements
in the harbours of ayr, Port Glasgow, and Greenock; and
the building of bridges at Hamilton and Rutherglen. He
was among the engineering works and improvements with
which he was connected. Business of this description crowded
upon him, and it is stated, in the "Encyclopædia Brittanica,"
that his reports are quoted for their perspicacity and
accuracy. In his surveys he used an improved method of
amplification, in Brebner's "Edinburgh Encyclopædia," article "Watt," and also a machine for
drawing in perspective, both of which he had himself in-
vented. It was while engaged on the greatest engineering
works that he undertook himself with this engine on a line
which had a cylinder of nine inches diameter, and which,
as far as it was worked, proved satisfactorily the practical
importance of his improvements; and as neither his leisure
nor his means enabled him to proceed, the project was for
a time dropped.

* The above date is taken from a chronologically arranged list of patents relating to the steam-engine, printed at the end of Mr. Watt's "Anecdotes of Steam-Engineers;" and is corroborated by his statement, published in his "Anecdotes," p. 248, 249 of that work, that the patent was procured in consequence of the improvements which were embodied in his last engine. Among the brief summaries of Watt's list of patents, the objects embraced in this are as follows: "Exhausting atmosphere from cylinders—keeping cylinder hot as the atmosphere—expelling steam from a passage newly arranged in Watt's engines—admission produced in separate valves—air extracted from condenser by pumps—platinum gained by the steam—steam wheel (of rotary engine)—partial condensation of steam—using oil and wax, instead of water of steam;" (Anecdotes, pp. 697.)

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Roebuck, to whom Dr. John Roebuck transferred his share
in the property of Watt in 1764, was a man excellently
qualified to bring it into profitable operation; his energetic
and business-like habits supplying what was wanting in
the character of Watt to cope with and eventually to con-
quer those moral obstacles which, more than any other
thing, retarded the introduction of the
Proper steam-engine an arduous undertaking. He also
possessed in his works at Soho mechanical facilities of a
superior order, as well as a large capital to establish the
manufacture. Watt's improvements were observed by Stuart,
* to a man like Watt, so unfitted, from feasting and habit, to stand alone, nothing could have been
more suspicious than his gaining the protection of two such
men (as Roebuck and Boulton) in succession. Obstacles
were seen to be overcome, and they both possessed, in an eminent degree, the master-art of influsing
into all around them a portion of their own matchless
energy. Projectors themselves, they were considerate of
their feelings, and knew how much the flow of thought
in Watt's mind, when he had once got his mind on a
project, was as much an art as it was a business. Assisted by their experience, and animated by their
generous approbation of what he had already
achieved, he was roused and carried onward to impart
greater perfection to his mechanism. Watt's connection
with Boulton commenced early in his year 4, and
they remained in partnership until 1806, when Watt retired
from business; but their friendship continued undiminished
until Boulton's death, after which Watt expressed, in his
notes upon Robinson's account of the steam-engine, his
highest esteem for Bay, in the passage quoted under
Boulton, vol. v., p. 274.

By the latter end of 1774, Watt completed at Soho, with
all the facilities afforded by the expert artisans under Boul-
ton, the last improvements which he had committed
his faith to. The engine was then exhibited to a deputation from the Cornish miners, and to
other persons competent to judge of its performances,
which were deemed highly satisfactory. Perfect however
was as the action of the improved machine, the patentees
knew that much remained to be done to bring it into
extensive operation; that costly machinery must be con-
structed to assist in the fabrication of the new engines;
and that a protracted struggle with ignorance and prejudice
was to be anticipated before any remunerative return could
be expected. Watt, when the engine was ready for public
exhibition, gave his patent, which had been granted for
years for which the patent was granted had already elapsed,
but it did not appear probable that the remainder of the term
would suffice for the reimbursement of past and prospex-
tive expenses; while there was no doubt that, the prelımi-
nary improvements in the disposition of the cylinders,
and in the construction of the improved engines would imme-
diately follow the termination of the exclusive privilege
held by Watt and his partner. They therefore immediately
applied for an extension of the term of their patent;
and, although the application was made at a time when
hostility was so severe and determined, was as a
violent opposition, in which Edmund Burke took part, "not,"
" as observed by Muirhead," from any hostility to Mr. Watt
or his patent, but simply from a sense of duty in defending
their interests, or what they conceived them to be,
the claims of a constituent," and which occasionally
arose from the expense and anxiety to the patentees, it was ultimately suc-
cessful, an act being passed in 1775 (16 Geo. III., c. 61),
vesting in James Watt, engineer, his executors, administrators, and assigns, the sole use and property of certain steam-engines, commonly called fire-engines, of his invention, described in the said act, throughout his majesty's dominions, for a period of twenty-five years from the passing of the act. Being thus assured a return for their outlay, the patentees prepared for the manufacture of steamengines on the most extensive scale, and with a degree of accuracy never before attempted in the art of machinery. In order fully to comprehend the difficulties conquered by Watt, it must be remembered that his machine required much more accurate workmanship than those used in the manufacture of clocks. James Boulton, the son of his partner, at the meeting held at Freemasons' Hall in 1829, for erecting a monument to Watt, at the period of the construction of the first steam-engine upon his principles at Soho, the intelligent and judicious Standard was to be invited to satisfy himself of the superior performance of the engine by his own experiments upon it, and had been convinced of its great superiority over Newcomen's, doubted the practicability of getting the different parts executed with the requisite precision, and suspected, from the extreme difficulty of attaining this desideratum, that this powerful machine, in its improved form, would never be generally introduced.'

Stuart states that when the engine tried at Kinnel was made by two artists who could give the requisite truth of workmanship to air-valves and cylinders of two inches diameter; while Watt required similar accuracy in cylinders of many thousand times their capacity, and in the large pistons, piston-rods, and other working parts.

The opposition raised to an extension of the patent had the effect of exciting the public attention, and the commercial tact of Boulton greatly facilitated the introduction of the machine to general use. Pursuing throughout an enlightened and liberal policy, the partners invited the public to an inspection of the engine, freely explained the principles of its action, and promoted a series of experiments under the inspection of practical and scientific mechanics whose professional character and position in society placed them in a position to be able to speak with authority of the advancement of science and manufacture, when the means were made, before the same persons, on an engine of Newcomen's construction, of the best make and in perfect order; and the results as to quantity of coal consumed, and amount of work done, in a given time, were contrasted. Thus the immense saving effected was rendered manifest to the parties to whom the use of the machine was recommended, and the remuneration of the patentees was made proportionate to that saving. Without attempting to realize their profit as manufacturers of the engines, Watt and Boulton thought it necessary to continue the act as far as the value of one-third of the parts saved by using their improved machine instead of the old fire-engine. After paying this very moderate claim, it cost little more than half the money previously paid for an engine in pumping water, which was far more than the wages of work, labour, and receiving the great saving of room, water, and repairs. Not only were the engines supplied, at certain fixed prices, according to size, at such a rate as would have been charged by any neutral manufacturer; but where persons were either unable or unwilling to throw aside the expensive apparatus which they might have already in operation, the patentees took the old engines in part payment for the new, often at rates far beyond their real value; while in other cases they erected machinery works, and were enabled to have engines on order when they produced the estimated advantage. In some instances parts of the old machinery were brought into use, as, for instance, by placing a smaller working-cylinder within the old one, and using it as the outer case or jacket; while in others, half the size of the old one, the power of the machine was so augmented as to present a striking illustration of the value of the patented improvements. Still further to facilitate the adoption of the new machine, it was agreed that upon terms which its use was allowed as clear as well as liberal as possible, the patentees laid down a standard of horse-power by which to calculate the power of their machines; and in so doing their honourable spirit was rendered strikingly apparent. It is evident that this was a standard of horse-power, which would have increased the apparent value of their engines, they estimated the power of a horse as equal to raising 30,000 lbs. one foot high in a day, while Smeaton had valued the force of a strong English horse as low as 20,000 lbs.; and they moreover calculated their machinery so as to perform work equal to raising 44,000 lbs., a foot high for every man and horse placed by it, so that, in fact, what they called a free-horse-power engine would perform as much as ten horses according to Smeaton's estimate. Even these liberal terms and modes of computing the power of their machines might have proved insufficient to effect their object, had not they provided, in all cases, a satisfactory check upon the use of every species of fraud, by which, as was generally represented as doing more or less than they really did perform, Watt contrived an apparatus for counting and registering the strokes of the great lever or beam of the engine, and thereby affording uncensored and indisputable data for computing the duty performed. This apparatus, or counter, was looked up in a box with two keys, one of which was kept by the proprietor of the engine, and the other by the patentees, who employed a confidential agent to open and examine the apparatus, in the presence of the proprietors, every three months.

Of the spirited manner in which Boulton conducted the mercantile department of the great adventure some idea may be formed from the fact, that upwards of 74,000 lbs. was paid to him before the year 1790 began, but at length their remuneration began to pour in, and in no scantly stream. In Cornwall and other mining districts, especially where coal was not abundant, the new engines would frequently replace the old. At the agreement the patentees agreed to receive a fixed sum, lower than the amount that would have been payable to them under the usual agreement, in lieu of the stipulated rent, they soon realized a very large annual revenue. In one instance, in one mine, in which three very large engines were employed, the proprietors agreed to pay 800 per annum for each engine as a compromise for the patentee's share of the saving of fuel.

The chief application of the old atmospheric engine, and also of Watt's first invention, was pumping water, for the purpose of pumping water from mines, a purpose for which the circumstance of its power being applied only during the downward stroke of the piston was of little consequence. As, however, the extension of manufacturing operations called for the introduction of some powerful and manageable prime-mover, more uniform in its action and less dependent upon local circumstances than either wind or water, various attempts were made to apply the steam-engine to this purpose, for which, in most cases, it was necessary to turn the power into a uniform direction, by giving its descent from which it might turn a water-wheel. A large atmospheric engine was erected for this purpose, in 1752, at Champion's copper and brass works, near Bristol; and such engines were subsequently introduced at several other places, among which was the Cornwall works. Watt was fully aware of the importance of some more convenient method of obtaining rotatory motion from the steam-engine; and of the numerous plans which had either been tried by others or were suggested by his own fertile imagination, he determined to have an engine which should be able, if necessary, to be stopped against the whole of the crank, the efficiency of which was shown by its use in the lathe, the knife-grinder's wheel, and other machines in common use long before its application to the steam-engine was thought of. A difficulty connected with the application of the crank to the single-acting engine, or that which exerted power in the downward stroke only, because it would have been necessary to use a very heavily-loaded fly-wheel to keep up and equalize the rotation imparted by the steam, was in some cases thought to avoid which Watt once proposed to employ two engines, working distinct cranks on the same axle. Watt however was not the man to publish his inventions until he had brought them to a considerable state of perfection; and he was frequently in the habit of only allowing a few men who were anxiously watching to obtain, by the most unscrupulous means, a share in the advantages of his ingenuity, were enabled to steal a march upon him. While his attention
was directed to other important points, patents were obtained, in or about the years 1779 and 1780, by persons named Waskrough and Pickard, for obtaining rotary motion from a steam-engine, the plan proposed by Pickard being the simple crank and fly-wheel. Since it appears probable that the idea was communicated through a work employed by Watt, it is likely that this patent might have been overturned; but as Watt did not think fit to contest it, he used, during the continuance of Pickard's patent, his own invention of the double-acting engine and its steam-engine with the condensation of steam—to determine the source of the air appearing when water was acted upon by the steam, the investigation of Watt was to ascertain how the steam condensed, and the law by which the efficacy of steam increased with the temperature: labour, time, numerous and difficult experiments, were required for the ultimate result; and when his principle was obtained, the application of it to the newociations of the steam-engine demanded a new species of intellectual and experimental labour. He engaged in this with all the ardour that success inspires, and was obliged to bring all the mechanical powers into play, and all the resources of his own fertile mind in exertion; he had to convert remained stationary into rotatory motion, and to invent parallel motion. After years of intense labour, he obtained what he wished for; and at last, by the regulating centrifugal force of the governor, placed between the beam and eccentric, the mathematician, and gave perfection to a series of combinations unrivalled for the genius and sagacity displayed in their invention, and for the new power they have given to civilized man.

It is pleasant to turn from the record of the meeting at which Davy thus joined with others among the most eminent men of his time in doing honour to the memory of the great engineer, to the narration of the disgraceful measures by which, not many years before, it was attempted to prevent the rival of Watt from reaping the advantages of his own improvements among the Cornish miners, who were deriving the greatest advantages from his machinery, and would in many cases have been compelled to abandon their works but for its giant aid, there were men who grudged to pay him the value of his inventions, and ventured to suppress, during which they were generously and powerfully assisted, according to Arago, by Colonel (afterwards General) Roy. Mylne, the engineer of Blackfriars Bridge, Herschel, Delou, Baedeker, Robinson, Morden, Bennett, Summer of the mechanical, and gave perfection to a series of combinations unrivalled for the genius and sagacity displayed in their invention, and for the new power they have given to civilized man.

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[The text continues with historical and technical details related to the steam engine and Watt's contributions.]
description of the machine as made by Boulton and Watt twenty years afterwards. The principal distinguishing features of the engines of Watt were the separate con-
denser and the helical cylinder; and these being retained in all his machines, gave him a virtual monopoly in various subsequent improvements which were rather additions to than modifications of his original design, but which were too essential to the engine to be separated from it. Yet, as observed by Stuart, 'After a series of experiments, in which he had been engaged for twenty years, to develop his ideas, the splendid result of his genius and perseverance—the per-
fected machine—was only to give the drawings and tables to prove that between the years 1789 and 1800 the engines which were sent from Soho were more perfect than could be fabricated from the description he gave of the one he erected in 1769.' Bramah, whose own distinguished ingenuity and practical acquaintance with the subject, joined with his high integrity and regard for truth, ren-
dered him a dangerous adversary, was enlisted among the determined opponents of Watt's patent, which he attacked solely on the ground just stated; while his printed letter to the judge who presided at the trial on which he held appeared as a witness, is referred to by Stuart, as being among a series of admissions of the value of Watt's contrivances, in which he 'points out inventions that had not been noticed or observed by others, with all the fine feeling of what is beautiful in art, and in which he was the master,' while 'he ceases not to importune to ask if the inventor has described these in a proper manner; and he comes always to the same conclusion, that he has not, and that therefore he is entitled to the superintendence of his work.'

At length, after a series of trials extending from 1792 to 1798, a unanimous and clear deci-
dion was given, fully vindicating and establishing the rights of the patentee. On this last occasion Mr. Rous, who acted as counsel for the patentees, delivered a speech, which was afterwards published in the form of a pamphlet, and in which he at once keenly satirized and overthrew the argument insisted on by the opposite party, that Watt had invented nothing but ideas; asking whether it could be supposed, in the circumstances, that he had left the undertaking, which, from the great superiority of the new over the old process, bid fair to be highly profitable, but this the French chemist declined. Another circumstance indicative of the usefulness of Watt's talents is the con-
struction and establishment of the proposition of his of Patents, and on the manner of obtaining them in large quantities.' This was published at Bristol in 1795; and about the same time appeared two or three editions of a Description of a Pneumatic Apparatus, with directions for performing the Experimental Airs.

Of Watt's success in the discovery of the composition of water, an investigation in which he, Cavendish, and La-
vosier, were engaged about the same time, very little can be said here. Referring those who are curious upon this subject to the proper works of the two last-named men, we are able to give any interesting particulars of Watt's engagement in the topic, for the undertaking was left with Arago in his Life or "Éloge" of Watt, and to the 'Historical Account of the discovery of the Composition of Water,' by Lord Brougham, illustrated with notes by the son of Watt, which is published as an appendix to Arago, "may suffice to observe that the great and pressing claims of Watt's professional avocations, together with his modesty and retiring habits, may in a great measure account for any difficulty that may arise in tracing the progress and extent of his discoveries in this, by no means minor of the many subjects to which he addressed his comprehen-
sive mind."

After retiring from business, Watt was with difficulty drawn into any undertaking, although on several occasions an appeal for engaging him was made. In 1809 the fertility of his inventive powers was shown by a beautiful solution of a difficult problem laid before him by a water-company at Glasgow, who, after establishing their works upon one side of the river Clyde, discovered that the water of very low quality was not fit for human consumption. He suggested a kind of natural filter on the other side, if they could over-
come the difficulty of laying a main from their pumps across the bed of the river. Watt contrived for this purpose a flexible iron pipe, the pieces of which were connected by a kind of bell-and-socket joint, of which he took

* In the article Boulton, Thomas, vol. iv., p. 129, it is improperly stated that John Kay was the person who resided in the founding of the Pneumatic Institution.
the idea from the tail of a lobster. The main was constructed from his designs in the following year, with the most complete success; and it forms a large tube about a thousand sand feet long, and two feet in diameter, capable of bending and applying itself to the irregular bed of the river. (Water Works, p. 125.) In another case, late in life, Watt was prevailed upon, by the solicitation of the Lords Commissioners of the Admiralty, to design a steam engine for the Board, and to give, with Captain Huddart and Mr. Jessop, an opinion upon works then being carried on in Sheerness dockyard, and upon other projected works designed by Messrs. Rennie and Whidby; and on this occasion he received the thanks of the Admiralty for authorizing the publication of the project, and for the encouragement given to the latter, especially in the design of a steam engine, for the propulsion of vessels. In 1814 he yielded to the wishes of his friends, of Brewster especially, by revising the articles 'Steam' and 'Steam-Engine,' contributed by Robinet to the 'Encyclopedia Britannica,' and enriching them with valuable notes, which were published with the collected discourses of Robison's articles, which appeared under the title of 'A System of Mechanical Philosophy.' The last project to which Watt devoted his attention, and which he appears to have very nearly perfected when he died, was a machine for copying sculpture, with which he had proceeded so far as to execute several specimens, which he presented to his friends as the early attempts of a young artist entering his thirty-third year. Having suffered so much, in other cases, from communicating his ideas to others, he expressed great solicitude that this project might be kept strictly secret; but when he had proceeded sufficiently with his design to contemplate obtaining a patent, he found that another person in his neighbourhood, who appears to have been entirely unacquainted with the other project, had been engaged in a similar undertaking. That proposal was subsequently made for obtaining a joint patent, but Watt was unwilling, as so advanced a period of life, to embark in such an undertaking.

About the year 1770 Watt had purchased an estate called Newhouse, near Lanark, where he died in his life, and he had also a property on the banks of the Wye, in Wales. His health improved in his latter years, and his intellectual faculties remained unimpaired to the last. It is related that, when upwards of seventy, he imagined that in his穀turn ascended, and gave them the task by undertaking some new study. Having selected the Anglo-Saxon language for this experiment, he mastered it with a facility which proved that there was little ground for his fears. At length, however, in the month of June, 1801, when he had passed over the 23rd of August in that year, he died, in his eighty-third year,—his last illness having been one, observes his son, rather of debility than of pain. Respecting the members of the Arago states, we are left in ignorance of the circumstances and cheerful disposition of his first wife rescued him from the depressing ingenuity and nervousness from which he had suffered so severely; and that, without her cheering influence, he might never have published his inventions to the world. In chiding for having husband and wife, and her surviving children, James, the son frequently referred to in this article, and a daughter, who married Mr. Miller, of Glasgow. By his second wife, who died in 1832, he had two children, neither of whom survived him. One of these, Gregory Watt, distinguished himself by his geological investigations, but died in 1804, at the early age of twenty-seven. As might be expected, this bereavement affected Watt very keenly; but Muirhead states that his remarkable activity of mind was not impaired, nor was his intellectual vigor lessened by the melancholy event; and that neither her conversation nor his correspondence betrayed any approach to the remarkable silence which Arago states to have been observed in the latter part of Watt's life.

Of the private character of the great engineer a most pleasing account is given by Lord Jeffrey, who, after stating that, independently of his great attainments in mechanics, he was an extraordinary, and, in many respects, a wonderful man, declares that he possessed so much and such varied and exact information—he had read so much, or remembered what he had read so accurately and well. He had infinite quickness of apprehension, a prodigious memory, and a certain rectifying and mathematical mode of understanding, which enabled him to extract something precious out of all that was presented to it. His stores of miscellaneous knowledge were immense, and yet less astonishing than the command he had at all times over them. It seemed as if every subject that was casually started in conversation with him, had been that which he had been occupied in studying and examining, such was the copiousness, the precision, and the admirable clearness of the information which he poured out upon it without effort or hesitation. In social conversation he allowed his mind, like a great encyclopaedia, to be opened and closed at pleasure, either enriched upon the occasion, to his associates; and he made everything so plain, clear, and intelligible, that, it is remarked, scarcely any one could be conscious of any deficiency in their capacity in his presence. With all this flow of information, his conversation was yet occasionally made up of few words, and the indications of talent, or who applied to him for patronage or advice. As his death approached, he was perfectly conscious of his situation, and calm in the contemplation of it, expressing his thankfulness for the length of days with which he had been blessed, for exemption from most of the infirmities of age, and for the calm and cheerful evening of life which he had been permitted to enjoy after the honourable labours of the day had been concluded. The public had only expected to lost his country, it was intimated to Watt a few years before his death, by a friendly message from Sir Joseph Banks, that, to use the words of Muirhead, 'the highest honour usually conferred in England on men of literature and science was conferred upon him,' and, in a similar vein, his proposal to erect a statue to him, while he felt flattered by the intimation, he determined, after advising with his son, to decline it. He became a member of the Royal Society of Edinburgh in 1794, of that of London in the following year, of the Saratov Society in 1810, and in 1814 of the 'Académie des Sciences' of the Institute conferred upon him the highest honour it can bestow, by electing him one of its eight foreign associates. In 1826, by a spontaneous vote, the University of Glasgow accorded him the degree of Doctor of Laws; and in 1824 a subscription was entered into for erecting a statue to his memory in Westminster Abbey, and a public meeting was held at the Freemasons' Tavern to do honour to the man who had taught us to wield, as it was then observed, the mighty instrument even in the hands of but a few men, and whose inventions were characterized by Davy as amongst the great means which had enabled Britain to display power and resources, during a long war, so infinitely and invarably, he might have been extricated from the physical strength of her competition. After the event, immediately raised, and Chantrey was engaged to furnish the statue, which is one of the finest of his works, and which calls to mind the remark of Watt's friend, Mr. Gray, 'When he heard the news, he asked his friends to contemplate an Art which, without fancying that he beheld the personification of abstract thought. To this an appropriate inscription by Lord Brougham was added. Another statue by Chantrey adorns an elegant chapel erected by Watt's only surviving son, at the parish church of Handsworth, near Birmingham, in the chancel of which he was interred. Other statues have been erected in St. George's Square, Glasgow; in the University of Glasgow, where the memory of Watt is also preserved by an annual prize which he established, the 'James Watt Prize;' the society devoted to the advancement of science and the arts; and in a public library at Greenock, which is enriched with a collection of scientific works presented by Watt during his life, and to which his son contributed liberally.

In 1834 M. Arago read to the French Académie des Sciences the 'Historical Eloge' to which allusion has been repeatedly made in this article, and which reflects much honour on the liberal feeling of the author. He has been presented in full in our first edition; in this translation we have chiefly referred to is that of Watt's relative, James Patrick Muirhead, Esq. M.A., published in 4to. in 1839, to which some valuable notes are added. Of other authorities referred to for the purpose of this memoir, mention may be made of the 'Memoirs of Watt' in the 'Encyclopaedia Britannica,' 'Brewster's Edinburgh Encyclopedia,' and the 'Public Characters of 1802-3,' together with the printed 'Proceedings of the
public meeting above referred to, are among the principal.

WATTEAU, ANTOINE, a celebrated French landscape-painter, was born at Valenciennes in 1684. He went to Paris at 1705, with the forgiveness of God, he had placed himself, and for some time was occupied in that branch of painting. But after some time his master left Paris, and Watteau was obliged to seek another employer: he for a short time found occupation as a copyist, and then as a reporter. By his improvement however he was soon rescued by Claude Gillot, a painter of some ability, who having perceived the peculiar genius of Watteau, took him into his house and employed him as a painter, writer, and by this employment the genius which he was soon rescued by Claude Gillot himself, that he forsook painting and took to engraving. Watteau now required repARATION rapidly: he was appointed peintre de fête galantes du Roi, and was elected a member of the French Academy of Painting. In 1718 he came to England, where he remained a year; but he painted only two pictures during his stay, for Dr. Meade, whom he came to consult, says Walpole. He returned to Paris in a very weak state of health, and died at Nogent, in the neighbourhood, in 1721, aged thirty-seven.

His colouring was rich, and his design, though peculiar, was the envy of his family at Stoke Poges, where his pictures are chiefly theatrical scenes, or fêtes champêtres, and were remarkably popular in his time: nearly all the French engravers of his period were occupied with the works of Watteau. The prints after his works amount to 320, and it was at his house that French painters in a short life have done so much as Watteau.

As regards the particular style of his works, Watteau is generally allowed to have had an injurious effect upon the taste of the French artists of his time: his pictures generally represent a shepherdess, shepherd, and®-scape-painter, public compositions, with grotesque figures, figures, satyr, &c., and confirmed Watteau in the same style; but the pupil soon surpassed the master in his own style, and this was so evident even to Gillot himself, that he forsook painting and took to engraving. Watteau's works are excellently rapid: he was appointed peintre de fête galantes du Roi, and was elected a member of the French Academy of Painting. In 1718 he came to England, where he remained a year; but he painted only two pictures during his stay, for Dr. Meade, whom he came to consult, says Walpole. He returned to Paris in a very weak state of health, and died at Nogent, in the neighbourhood, in 1721, aged thirty-seven.

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like a shock of corn in his season, he extended into the regions of perfect and immortal life and joy.

The tenor of the remainder of Watt's life was uniform. Sir Thomas Abney had been bred up in dissenting principles; King William knighted him; and he served the office of Lord Mayor of London in 1700. His first wife was a daughter of royl, the first pastor of the Mark-lane congregation; his second, a daughter of Mr. Gunston, an honoured friend of Watts. The house of the Abneys at Theobalds adjoined the site of Burleigh's residence. Of the splendid gardens of that palace there remained little which Watts was not beguiled by two rows of elms, and within a few yards of the entrance of that walk there stood, in Sir Thomas Abney's garden, a summer-house, which, fifty years after Watt's death, was almost in the same position in which he wrote some of his works. Watts's usefulness among his flock was in no wise diminished by his residence at Theobalds. There was a carriage at his command when his health permitted him to officiate in London. When he was incapable of public labour, he refused to receive his salary; and at all times a third part of his income was devoted to charitable uses. The seasons when indisposition incapacitated him from public duty were spent in literary composition. Perhaps, Dr. Southey has justly observed, 'the peculiar position in which he was placed gave to his mind and the affection with which his congregation regarded him. It made him independent of them; and they looked upon him not in the light of a dependent upon the wealthy family with which he was domesticated, nor as a humble fact, but in the reality that was in the religious faith. He adopted it by the especial friendship of one of the wealthiest and most considerable persons attached to the dissenting cause.' Moreover, the congregation felt that the service to which his health would permit, Mr. Watts conferred upon them a favour and a kindness which could not be imputed to any motive of interest, or even of his own convenience, but proceeded from his sense of duty, his real in the dissenting cause, and his attachment to his church. They prized, therefore, as they ought, the more highly; and they were proud of his growing reputation, for he was then the best preacher among the dissenters, and one of the best of those times.

The most important of Watt's publications are:—1. 'Logic,' or, the Right Use of Reason in the Inquiry after Truth: with a variety of Rules to guard against Error in the affairs of Religion and Human Life, as well as in the Sciences, published in 1725. This treatise, which appears to have been written by Dr. John Locke of Oxford, was written originally to assist the studies of Watt's pupil, Sir John Hotopp, and was revised, augmented, and published at the request of Mr. Eames. In the preface of this work, it was said: 'To its improvement, if not to the death of it, let Clerics, it must be considered that no man who undertakes merely to methodize or illustrate a system, pretends to be its author.' 2. 'The Knowledge of the Heavens and Earth made easy; or, the First Principles of Astronomy and Geography explained by the use of globes and maps, with a solution of the common problems by a plain scale and compasses as well as by the globe: written several years since, for the use of learners,' published in 1726. This is the work of an intellect untrammelled. The amount of the author's scientific qualifications may be inferred from a passage in the preface:—'Most of the authors which I have perused in these days, when I wrote many parts of this book, were of older date: and therefore the calculations and numbers which I know to be in some of these books as exact as those with which some later writers have furnished us.' 3. 'The Improvement of the Mind,' an expansion of some passages in Locke's 'Conduct of the Human Understanding.' 4. A number of works for children and of a more popular cast. These were given into the hands of the churchwardens of St. Paul's, for the support of the parson and the maintenance of the youth at school: 'Divine Songs attempted in easy language for the use of Children,' &c. It was from motives of gratitude to the provision made by Sir Thomas Abney that Watts first entered in this humbler class of compositions. No compositions of the kind have obtained such extensive use as his hymns and songs for children. Doddridge relates in one of his letters to Watts an affecting incident regarding one of them:—'I was preaching to a large assembly of plain country-people at a village, when, after a sermon from Hebrew vi. 12, we sang one of your hymns (which, if I remember right, was the 140th of the second book), and in that part of the worship I had the satisfaction to observe tears in the eyes of several of the people; after the service was over, some of them told me they were not able to hear enough of it; one old woman, so deeply were they affected, and the clerk in particular said he could hardly utter the words as he gave them out.' 5. 'An Essay towards the Encouragement of Charity Schools, particularly those which are supported by the Protestant Dissenters for teaching the Children of the poor to read, write, and perform the several branches of knowledge which Schools which instruct them to write a plain hand, and fit them for Service or for the meaner Trades and Professions of Life: to which is prefixed an Address to the Supporters of Dissenting Establishments. This pamphlet was published in 1781; a sermon which Watts had been desired to preach in the November of the preceding year, in support of the dissenters' schools. It indicates the extension of education to the poor; and the establishment of dissenting schools by the High Church party. 6. 'A Sermon preached at Berry-tree, on the occasion of the Death of our late gracious Sovereign George I., and the Peaceful Succession of his predecesor, 1829, was written at Aberdon which is chiefly valuable as an exhibition of the religious and political views of the dissenters at that period. The theological works of Watts are too numerous to admit of being recapitulated here. His 'Three Dissertations relating to Poetry and the Christian Scheme, as represented in the Psalms,' preached in the years 1718-19, published in 1781, with a preface by Dr. P. Smith, may be taken as fair specimens. They are marked by much of that logical phrase which characterizes the writer. In far as he ever craved, but far more than their average gentleness and tolerant spirit. The 'Hymn Lyric of Watts, from which an estimate of his poetical talents may be formed, was republished in 1857, with a memoir by Dr. Southey. A poet he can never be called: his works are too often turgid and sometimes nervous; and the matter is always judicious, sometimes touching, sometimes approaching to eloquence.

Watts is a classic of the people. His hymns for children have exercised an influence on the minds of the young far beyond the limits of the dissenting body. His 'Logic' was once a textbook in various places of education. He was in his day one of the most zealous advocates of the principles which placed the house of Hanover on the throne; in his pamphlet in defence of the dissenting charity-schools he was the first to enter as a text the present of German instruction who gave, at a latter time, their countenance and support to Joseph Lancaster; and his theological writings are prized by almost the whole religious public of Great Britain. If he never wrote a line in the English language is spoken Isaac Watts will be found to have exerted so important a form in the formation of public opinion. His writings have contributed much to keep alive the spirit of freedom, toleration, and piety. 'It was therefore with great propriety,' the opinion is entitled to the greater weight as coming from the high-church Tory, Dr. Johnson, that, in 1729, he was received from Edinburgh and Aberdeen an unsolicited diploma, by which he became a doctor of divinity. Academical honours would have more value if they were always bestowed with equal judgment.

The conduct of some very near relatives embittered his latter days, and for a while he seemed, being at the time in a state of extreme weakness, supplanted by it to such a degree, as hardly to take notice of anything about him. The worst of the matter was that he was not willing to Abney,' says a correspondent of Doddridge, 'keeps him in peaceful ignorance and his enemies at a becoming distance; so that in the midst of this cruel persecution he lives comfortably, and when a friend asks him how he does, answers, Well. The most invincible enemy of Watts was his fellow Dissenter, the Rev. Samuel Chandler, who wrote a funeral sermon on his text the 25th of November, 1748, and in the 75th year of his age, he departed 'in sure and certain hope.' He was buried in Bunhill Fields; Mr. Samuel Johnson paid the expenses of a funeral oration at his interment; Lady Abney and Sir John Hayton erected a handsome tomb over his grave; and the number of funerals sermons preached and published on the occasion bespoke the deep sense entertained by the dissenters of his merits. The texts of some are strikingly appropriate; that of the Reverend
David Jennings was:—By it, being dead, he yet speaketh; that of the Rev. Caleb Ashworth, "Know ye not that there is a prince and a great man fallen this day in Israel."


**WAVES AND TIDES**

in possessing many respects the same character, it has been thought proper to state in one article the phenomena and the theories of both.

From the earliest times the periodical risings and fallings of the waters on coasts or in rivers have been noticed; and the recurrences of the phenomena depend so obviously on the positions of the sun, that the inhabitants of those celestial bodies in producing them have ever been assigned as their cause. The tide appears as a general wave of water which gradually elevates itself to a certain height, then as gravitation-sinks till its surface is about as near the sea as below these causes their least to before it, and it from that time the wave again begins to rise; and this reciprocating motion of the waters continues constantly, with certain variations in the height (with respect to the mean level), and in the times of attaining the maxima of rise and depression.

Ordinary waves are produced by any cause which disturbs the equilibrium of the particles of a fluid. Thus a stone suffered to fall into water at rest gives rise to a series of concentric circular waves extending to a great distance from the point where it falls; and if a body of water from a level above that of the general surface will produce a series of waves advancing along the canal. Waves are also produced by suddenly pressing a solid into water, or by suddenly withdrawing it from the water; and such a single wave may be produced by sinning a solid body in water and moving it quickly, for a time, in a horizontal direction. The inequalities of the pressure of the air on the surface of water, whether at rest or in motion, when a gentle wind is blowing, will produce ridges, and the wind may continue long after the wind has blown a certain distance from the place of their origin, become considerable waves. In the open seas the heights of the waves depend on the force of the wind; but in confined situations both the heights and forms of the waves are affected by the resistance of the bed, by reflections from the shores, and other circumstances. When waves are formed by wind blowing from the land, each wave-surface preserves constantly the same height; but the heights go on increase, and may be seen from the shore.

Waves appear generally to be of a cycloid form: their summits have a gentle curvature, while the height bears a small proportion to the length in the direction of the motion; but as the height increases, the summit becomes more convoluted, forming a peak of a ridge, and a particle at this becomes too sharp for the preservation of equilibrium, the force of the wind acting horizontally near the top breaks it into foam or spray. As waves advance towards a shore, the water becoming less deep, the resistance of the bed increases, the heights diminish, the same time their heights to increase, so that the front of the wave becomes steep; and the motion of the upper part, towards the land, being more rapid than that of the lower part, it follows that the summit is carried beyond the point of intersection, and is supposed to be similar to a surf. The breaking of waves over a sunk shoal depends chiefly on a like cause.

The surface of the sea often presents very complex phenomena: it may happen, for example, that while a long swell is running along in one direction, a breeze will produce a series of waves moving in the direction of the wind; and a second breeze springing up in another direction will produce a new series, which will become mixed with the former without damping either, and the result may be a series of waves intersecting the other systems. When a breeze has been blowing for some time from a certain quarter, and afterwards changes to the opposite, two series of waves may be seen moving in contrary directions, and if the wind has been of equal lengths, the vertical direction of the compound wave will be equal to the sum of the difference of the ordinates of the simple waves, according as the crests are coincident, or fall in each other's intervals. These phenomena are indicated in the first and second of the subjacent figures, where ab represents the first undulation, and a'b" the second; the straight line AB being the horizontal surface of the water when at rest. Again, when there exists a third system of waves, caused, for example, by reflection from a coast, so as to be parallel to the two former systems, the combination of the three systems has been observed to produce a compound wave of the form represented in the third figure. (Report of the British Association on Waves, vol. vi.)

The waves of the sea do not extend to considerable depths: from the deep, those above, descending by appointed by the British Association in 1836, it was found that with a depth of water equal to 12 feet, waves 8 inches high and 4 or 5 feet long did not sensibly affect the water at the bottom. Waves from 30 to 40 feet long, oscillating at intervals of 6 or 8 seconds, produces some effect, but much less than near the surface; and it was ascertained that, in waves produced by the wind on the surface of a deep sea, the velocities were not a direct function of the depth.

It must not be imagined that when water is agitated by waves, its whole mass has the movement which at first sight appears from the observed progressive motion of the undulation; and, in order to account for the formation and motion of waves, it is sufficient to assume that the particles of water, when disturbed, have merely small oscillatory motions in horizontal and vertical directions. When from any cause, as the fall of a stone into it, the water becomes agitated, a series of horizontal motions to and fro are produced; and while in a slender vertical column of water the horizontal motions are in opposition, the surface neither rises nor falls; but if, in two neighbouring columns, the particles advance to meet each other, the water becoming compressed, the surface rises; if the particles retreat, the surface sinks by gravity, the surface falls. These different horizontal movements existing successively in the same vertical column, and simultaneously in those which are adjacent to each other, the surface of the water becomes undulated. In this case, however to understand the figure of waves, let the straight line ab represent the surface of water when undisturbed, and, disregarding the horizontal oscillations by which the water is alternately compressed and dilated, let the particles be conceived to ascend and descend alternately in vertical lines, that is, in lines parallel to ab or a'b", which is supposed to be particular to the place. Now, at the instant let the surface of the water have, in a vertical plane, the form abed, &c., and let the force of ascent cause the particles in the line abm to be raised up to the line a'b'm in a portion of time represented by T, that force becoming less as it is farther from horizontally, and ceasing at m; at this place the force of descent commencing, the particles in the line medn fall simultaneously with the rise of the particles in abm, and at the end of the same time T they occupy the line m'e'n. Here the force of ascent acts, and the particles in nefp at the end of the same time occupy the line nef'p, and so on. Thus at the end of the time T the surface of the water has assumed the form abf'd"e', &c. After this time the force of descent on the particles in the line of the (a'c'c') ceases to act vertically, during a time equal to T, into the line abm; at m' that force ceases, and the force of ascent raises the particles in m've'n' vertically into the line a'b'm'e'n', and so on; thus, at the end of the time 2T from the given instant, the surface of the water has the form A'B'C'D'.

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manner, at the end of the time \( 3T \) the forces of descent and ascent will have brought the particles into the line 
\[
a^*b^*c^*d^*, \quad \text{etc.}; \quad \text{and at the end of the time } 4T \text{ the particles will be in the line } a^*d^*, \quad \text{etc.: so that in this time }
\]
every particle of fluid has made the complete vibration vertically, as \( a^*a^*a^*a^* \), and within the same time the top of the wave has assumed successively the positions 
\[
d, \quad e^*, \quad f^*, \quad g^*, \quad A. \]
The horizontal distance from \( d \) to \( A \) is called the length of the wave; \( L \) it be represented by \( L \), and let \( r \) express the time \( 4T \) in which the summit of a wave has

\[
\text{passed from } d \text{ to } A; \quad \text{then } \frac{L}{r} \text{ is called the velocity of the wave.}
\]

On observing the characters of experimental waves in troughs with glass sides, it is found that, by the combinations of the horizontal and vertical vibrations, the particles of water describe the peripheries of circles or ellipses. In the upper parts of the curves, near the tops of the waves, the particles move with their greatest velocities in the direction in which the wave crests; and in the lower parts, near the bottoms of the waves, they are moving with their greatest velocities backwards; and at the extremities of the horizontal diameters, about the level of the preceding surface when at rest, the motion is almost wholly vertical.

The varying attraction of the sun or moon on the particles of water in the ocean is alone sufficient to produce the perturbations by which waves are formed; and if it be assumed that the solid nucleus of the earth is covered entirely with water, both on the land and on the sea, the spherical form, and consequently the long axis being in the direction of the line joining the centres of the earth and sun, and the water forming the instant of greatest

The interval between two successive culminations of the moon on the same side of the geographical meridian of any place varies from about 24 hours 40 minutes to 25 hours; and thus the intervals between the times of high-water and low-water, though of different lengths, are again and again being followed by other similar intervals of time.

The position of the moon at the time is however subject to certain variations even at the same port; and it differs considerably at different places. The elevations also of the water at the same ports, and the times of high and low water, are at a distance from one another equal to half the circumference of the earth.

Very little attention to the phenomena of the tides seems to have been paid to those in close proximity. The tides of high-water are nearly regular, the greatest elevation of the water takes place at intervals of about 12 hours 25 minutes, and the greatest depressions at the like intervals of time from each other; each greatest depression taking place at the time of two minutes, or the amount of the earth's diurnal revolution in a day; and the occurrence of high-water at any place is observed to have a dependence on the position of the moon with respect to the meridian of the place; at the poles it coincides with the moon'sApogee, and occurs every meridian, by being placed some time before or after the culmination. The position of the moon at the time is however subject to certain variations even at the same port; and it differs considerably at different places. The elevations also of the water at the same ports, and the times of high and low water, are at a distance from one another equal to half the circumference of the earth.

During about half the year, the high-tide which occurs when the moon is above the horizon is greater than that which occurs when the moon is below, and during the other half-year the phenomenon is reversed. In every place, at about the times of new and full moons, the highest tides attain their greatest elevation; and at the times of the quadratures, the least: the former are called spring-tides, and the latter neap-tides.

After the movement of the high-water coincides with that at which the current ceases to flow, but this is not the case with the sea which communicate at both extremities with the ocean. For, if it be imagined that a tide-wave flows in at one of the extremities, this will cause no motion of the current; but the waters which are passing off at the opposite extreme will, on the contrary, have a depression, or, at least, a diminution of that elevation; the surface therefore must be the highest when the current flows with equal rapidity at both extremities, and not at the time of the half-tide. When the stream continues to flow up for three hours after the high-water, it is said to make tide and half-tide; if it continues to flow during one hour and a half, it is said to make tide and quarter-tide, and so on. Near the shores of the British Channel, probably in consequence of the obstructions caused by the land, or the disturbances at the mouths of rivers, the progressive movement of the tide-wave is more retarded than in the middle; and in some places the current has curvilinear motions, which on the French coast are on the sides and in opposite directions. The race of Portland is a current produced by the tide-wave, while advancing along the shore; being arrested by the promontory till it attains a height which allows it to flow off obliquely at a considerable velocity.

The race of a tide-wave near the top of the wave places rapidly the shoving of the sea and the confinement of the water between the banks; for the motion of a body of water is capable of raising the particles to the height through which they have actually moved, and which is calculated from the wave; and if the same motion is employed in raising a smaller quantity of water, it is evidently capable of raising it higher; thus, when the contraction is considerable, as in the Bay of Fundy, the Bristol Channel, and other places, the elevation becomes very considerable; at Cheshw. it amounts to 60 feet. When, at the mouth of a river, the bed has a long and gentle slope on each side, the waves, becoming high and steep, fall river, and flow up rapidly with a surf, constituting what is called a bore; the Dee in Cheshire, where it enters the English sea, which occurs in the Amazon is said to be from 12 to 15 feet in height. In flowing up a river the summit of the tide-wave reaches the different stations later as these are further from the mouth; and in the Tames it advances half a day, a month, and a year in the years of highest tides.

It is observed also that the current of a river runs upward during some time after the summit has passed any station, and downwards for some time after the surface of the water is at the lowest; the intervals between the times of passing the other stations are greatly diminished as the stations are further apart, while the intervals between high and low water increase.

From the observations made by the committee of the British Association in 1830, on the tide-waves of the river Dee at Cheshire, it was found that the average time of advance of the tide advanced 5'275 miles in intervals of time varying from forty-five minutes to one hour, or, at an average, at the rate of 6'4 miles per hour; and that the wave of high-water advanced the same distance with a velocity, by an average of 10'0 miles per hour, which, it is said however to have been impossible to determine whether the wave which carried the flood-tide to the lower station was the same as that which carried it to the higher. It is thought probable that the wave which passed the mouth of the Dee would have been very much faster than that which has its origin in the mouth of the Thames. The current in the Dee is represented by a subsequent wave from the sea. The wave of high-water, being above those obstructions, flowed up more regularly, and the observed height of the wave has been estimated with near certainty from the measure of the wave's observed velocity: it being understood that the velocity of a wave is that which would be produced by a body falling from rest through half the height of the wave.

In order that the phenomena of the tides at different places may be readily compared together, charts have been constructed, on which are drawn curve-lines joining the points at which high-water takes place at the same time. Now, the heights of the wave and the times of its greatest elevation vary at every place from day to day, it is clear that the necessity of knowing the time of high-water, the number of hours it advanced, and the times of the quadratures; and on this account, by general agreement, the time of high-water at every seaport on the days of full and change of the moon is chosen. This is called the Establishment of the Port, and an extensive table of Establishments for the ports of Great Britain and Ireland is given in the 'Nautical Almanacs,' the hours and minutes indicating the time from apparent noon on the days of new and full moon when high-water takes place. Since, on the first of these days, the moon passes the meridian of the port, the time of the elevation of the high-water may be found from the table by merely adding the Establishment to the time at which the moon comes on the meridian on the given day. Finding upon the surface of the earth and sea any number of points at which the Establishment is reckoned, it is known that there is the same, a line drawn through all the points will indicate the summit of a great tide-wave at that time: drawing a curve in like manner through all the points at which the Establishment in Greenwich time is an hour later.
there is obtained a new position of the summit; and it must then be understood that the wave has travelled, in the sense above explained, from the first line to the text in one hour. These are called 'Cotidal lines;' they were first indicated on a chart of the world by Mr. (Sir John) Lubbock, in the 'Philosophical Transactions' for 1831, and an extensive series of such lines are traced on the chart which accompanies Mr. Whewell's 'Essay towards an approximation to a Map of Cotidal Lines,' in the 'Philosophical Transactions' for 1833.

The definition above given of the 'Establishment' is only approximately true: it is observed by Mr. Whewell, in the 'Essay,' that it would be correct if the high-tide always occurred when the moon's hour-circle makes equal angles with the meridian; but in fact the hour of tide on any day is reckoned from the time that the sun is on the meridian; and as the moon changes her right ascension every day by about forty-eight minutes (the observed hour of the tide being given on the day of new or full moon), the moon's hour-angle may differ according to the time of the day when the conjunction or opposition takes place, compared with the time of day when the high-tide is observed. Therefore an observation of the hour of the tide on the day of new or full moon may leave an uncertainty of about 1h. 8m. in the time of the 'Establishment,' unless account is taken whether the morning or afternoon tide was observed, and at what hour the straggy took place.

The subjoined cut, which shows the principal cotidal lines in the Indian and Atlantic oceans, is from Mr. Whewell's chart above mentioned, and contains the modifications introduced in that which is given by Mr. Airy, in his Essay on 'Tides and Waves,' in the 'Encyclopaedia Metropolitana.'

In investigations relating to the tides, it is required to determine the form assumed by the surface of the water when the particles are subject to the actions of disturbing forces; and for this purpose it is convenient to assume that if no such forces existed, the earth would consist of a solid spherical nucleus within a body of water whose external surface is that of a sphere concentric with the nucleus. Let the circle \( cd \) represent the nucleus, and the circumference \( ab \) the surface of the surrounding water in a plane passing through the centre of the earth, and the sun or moon at \( M \); then, in the theory indicated by Newton, the attraction of the celestial body will draw the particles of water towards it so that the surface \( ab \) will assume the form \( a'b' \); at the same time the attraction exercised on the solid part \( cd \) will cause the latter to take the position \( c'd' \). Thus at the same instant the surface of the water at \( a' \) and \( b' \) is farther removed from the centre of the earth than it would be if there were no perturbation; while at \( e \) and \( \delta \) it is nearer. If the central body were constantly in the plane of the equator, the summit of the elevated water would also be in that plane, and exactly or nearly under the body. A section of the spheroid of water passing through the poles of the equator and the summit just mentioned would be an ellipse, and its periphery would coincide with the direction of a terrestrial meridian.

By the diurnal rotation this tide-wave, as it may be called, would appear to move about the earth from east to west at the rate of above 1000 miles per hour at the equator; and its positions at the rate of every 1 hour would constitute a series of cotidal lines. Hence, if a small island at the terrestrial equator were to project above the surface of the water, it would arrive successively at the points \( a', e, b', f, \alpha' \), so that in the time of a rotation of the earth on its axis with respect to the celestial body, there would be at the island two states of high-water and two of low-water.

The arrival of the island at the summit \( a' \), which would, if \( M \) were the moon, take place at the end of every 24h. 50m. nearly, is called the diurnal tide; and that which takes place when the island arrives at the summit \( M \), that is at 12h. 25m. after the former, is called the semidiurnal tide. By this theory there ought to be scarcely any tides near the poles, the water being always drawn from them towards the tropical regions; and the attractions of \( \epsilon \) under the celestial body, where the moon's distance is equal to two, it should follow that the diurnal tide is greater than the semidiurnal tide, neither of which circumstances is conformable to observation.

If an island having a great extent from the equator towards the north and south were to intercept the tide-wave, the elevated water, passing round the extremities of the island, would on its western side form two waves, which would advance towards, and meet one another at the equator, making, at different places on the coast, high-water successively later, in the directions of their motion. And it is easy to conceive that the tide-wave of a great ocean will send branches into any seas which it may approach in its movement about the earth: such are called derived tides.

The combined actions of the sun and moon, when those luminaries are in conjunction or opposition, that is, at new or full moon, may be readily conceived to produce what are called spring-tides; and the diminution of each other's attractions when in quadrature, to produce the ebb-tides. It may further be understood that, as the distances of the sun and moon from the earth vary by the ellipticity of the orbits; at the times when either of the celestial bodies is in perigee, its attractive power being greater than at other times, the tide-wave raised by it will attain a greater elevation than usual; on the other hand, when in apogee, the high-water elevation must be the least.

The tides are greatly modified at any station or port by the position of the latter with respect to the equator, and by the declination of the central body of the tide-wave are, at the same instant, diametrically opposite to one another; and if the latitude of the station were equal to the moon's declination on a given day, both moon and station being for example north of the equator, the summit of the wave would on that day be at the place where the moon is in or near the zenith, but about twelve hours afterwards, the station, having described half the circumference of a circle about the earth's axis by the diurnal rotation, will be on the opposite side of the meridian of the equator; and the summit of the wave on the other side of the equator, will be at a distance from the station equal to twice the moon's declination; consequently the height of this tide will be much less than that of the former tide. The contrary phenomenon occurs when the moon and the station are on opposite sides of the equator.

The only tides with which we can be said to be well acquainted are those of the Indian and Atlantic oceans; and from the known times of high-water at different places, it is ascertained that the summit of a wave advanced from the equator to the north, to the south of New Holland into the Bay of Bengal, and towards the Persian Gulf, causing the hour of high-water to be successively later at the ports from Ceylon northwards, on both sides of the western peninsula of India. The summit of a single wave may extend from the mouth of the Red Sea, along the eastern
coast of Africa, to the Cape of Good Hope, where it joins the tide-waves of the Atlantic. These advancing northwards, cause the time of high-water to be successively later at the different ports on the western coast of Africa and Europe, 17° land on the whole coast of South and North America; so that the wave which at a certain instant is at the Cape, in 16 hours from that time is at the mouth of the English Channel and on the western coast of Ireland. This wave, being apparently checked in its progress by the British Islands, is divided into two principal branches, of which one flows up the Channel, and passing through the Straits of Dover, is off the mouth of the Thames in 8 hours from the time that it was at Brest. A small branch advances up St. George's Channel; but the second principal branch of the wave flowing round the southern extremity of Scotland, proceeds slowly down the North Sea, and meets the first branch off the mouth of the Thames in 20 hours from the time that it was at the entrance of the Channel.

From Rio Janeiro to the Falkland Islands a wave summit seems to advance directly from east to west; and from the form of the continent of South America, the high tide occurs successively later in going southward from Cape Frio, as if the wave came from the east. The waves from the north also flow northward, from Terra del Fuego and the Falkland Islands to the coast of Patagonia, and at Port St. Elena on that coast it occurs 12 hours later than at those islands. On the western coast of America the tide seems to flow to south, being repelled by the Straits of Magellan; while from the former place it travels northwards. In the Pacific Ocean the general direction of the tide-wave is from east to west; but the heights of the tides are small, not exceeding 2 feet at the islands of the South and South Atlantic, by Mr. W. M. Johnson ('Phil. Trans.,' 1833) that this must not be understood to be the tide which would be raised if the whole earth were covered with water, on account of the modifications produced by the form of the continent of South America. The mouth of the San Francisco Bay, 37° and 30° S. lat., has the high-tide earlier than points which are situated towards the north or south of that tract.

Peculiarities in tides, arising from the interference of waves, occur in many different places. In the middle of the North Sea there is supposed to be a considerable space within which the tide produced by the waves coming from the north and south takes place at one time. And Mr. Whewell states, on the authority of Captain Hewett, that about the Orver Shal there is no sensible rise of the tide till 3 hours after the time of low-water; but when the ebb stream has nearly ceased, there is a sudden rise of 5 or 6 feet; so that nearly the whole rise of the tide occurs in the last 3 hours.

In 1740 the Académie des Sciences offered a prize for the best memoir on the theory of tides; and the paper by Daniel Bernoulli on the flux and reflux of the sea shared it with those of Euler and Maclaurin. In that paper it is assumed that the water is kept in equilibrio by the attractions of its particles towards the earth's centre of gravity and the disturbing forces exercised by the sun and moon; and though the results of that theory are found to differ greatly from the observed phenomena, the theory itself is deserving of attention, since the analytical expressions which have been obtained by it first exhibited a few phenomena distinctly from one another: those expressions consequently became guides to the observer or experimenter in his efforts to ascertain the true values of the Earth's forces, on the representation of which they are founded.

Though the attraction exercised by the solid nucleus of the earth on a particle of water at any distance from its centre, being considered the same as it would be if all the matter of the nucleus existed in that centre, is represented by \( E \), \( E \) being the mass of the earth and \( r \) the square of the distance of a particle from the centre. But if \( x \), \( y \), and \( z \) are rectangular coordinates of a particle, the centre of the earth being the origin, we have \( r = x^2 + y^2 + z^2 \); and the partial differentials of the expression \( E \), relatively to \( x \), \( y \), and \( z \), represent the effects of that attraction upon a particle in the directions of the three axes. If the attractions on the particles of water for each other are taken into consideration, there must be determined the attraction exercised upon a particle by all the water between the spherical nucleus and the exterior surface (supposed to be spheroidal) of the surrounding fluid, and the expression for this attraction must be added to that for the solid.

The disturbing forces on the sun or moon upon a particle of water is represented by \( F \); \( S \) being the mass of the celestial body and \( R \) the distance of the particle of water from it; and the partial differentials of that expression relatively to \( x \), \( y \), and \( z \) give the values of the attraction in the directions of the coordinate axes: but the disturbing force exercised by the sun or moon on a particle of water being equal to the difference between its attraction on the particle and its attraction on the centre of the earth—the latter, which is represented by \( D \) (being supposed to be the distance between the centres of the earth and celestial body), is subtracted from the attraction exercised on the earth and the sun, and the result thus obtained from the sun, and the result thus obtained is supposed to be parallel to the line joining those centres, in order to have that difference. The attracting forces of the earth in the directions of the three axes being subtracted from the disturbing forces of the sun or moon in the same directions, the remaining force is represented by \( X \), \( Y \), and \( Z \) by Mr. W. M. Johnson ('Phil. Trans.,' 1833), and by Mr. W. M. Johnson ('Phil. Trans.,' 1833), and is an exact differential; the form of the expression for the equilibrium is determined by making the integral of the expression constant.

The resulting equation being found to correspond with the general equation to a spheroid, a comparison of like terms in the two equations gives the values of the constants which enter into the former. If \( r \) represent the mean distance of the spheroidal surface of the water from the centre of the earth, and \( \alpha \) represent the distance of any point on that surface above or below the mean level; then \( r + \alpha = \rho = \rho_A \) is the radius of the surface, and the determination of \( \alpha \) for any place gives at that place the height of the water above, or its depression below the mean level.

Uniting the effects of the solar and lunar disturbances by simply adding them together, since the disturbing forces are very small compared with the force of gravity; and introducing, in place of the rectangular coordinates, angles which depend on the longitude and latitude of a station, with the right ascension and declination of the sun and moon, to be very small, the value of the equations consist of three parts: one of these depends on the variation of the declination of the sun and moon, and indicates a slow tide which goes through its changes in about fourteen days; the second depends on the hour angles both of the sun and moon, and indicates a slow tide through their changes in a solar and a lunar day respectively. These being combined, there is produced a diurnal tide, the highest state of which should precede, at a variable interval, the moon's culmination between the times of rising and setting of the sun, and should follow it between the quadratures and syzygies. It has been found however that the observed accelerations and retardations, and also the absolute elevations of the water, in very few cases agree with the results of the theory.

The third part depends on the hour angles just mentioned, and consequently indicates two semi-diurnal tides, which being combined constitute one such tide, whose highest state is variable. The nature of the expression shows that the diurnal should be the greatest at the equator, and should diminish till it vanishes at the poles: it denotes also that it is greatest at new or full moon, and least at the quadratures. The theory moreover indicates that the difference between two consecutive times of high water ought to keep the same distance from one another, whereas they are known to be nearly equal to one another. Both Newton and Bernoulli endeavoured to explain this circumstance by the hypothesis of a general oscillation of the sea, in consequence of which the highest tide gives to the lowest a quantity equal to the difference between them; but the researches of La Place have shown that, even with such oscillations, the two tides could not (according to the theory) be equal unless the sea were everywhere equally deep.

Euler, departing from the hypothesis that the sea is
always in equilibrio under the action of the sun and moon, endeavoured to introduce the subject of fluid oscillations in his theory of the tides; but the laws of undulations were not then known, and Euler assumed that a molecule of the sea in motion endeavours to regain the position which, in a state of equilibrium, it would occupy in a vertical line with a force proportional to its vertical distance from that position.

The theory adopted by La Place, in which there are taken into consideration the laws of fluid molecules when acted on by attracting forces, was a great improvement on that of the mathematicians before mentioned; and it is found to produce a more near agreement with the observed phenomena. The elaborate investigations of La Place will be found in the Mémóires de l'Académie des Sciences for the years 1775, 1776; and in the first and fourth books of the Mécanique Céleste. As in the former theory, the solid nucleus of the earth is supposed to be entirely covered with water of uniform depth, and the investigations commence with the proof (Méth. Ed, liv., i., ch. 8) that any portion of the water, however its place may be changed, will always retain the same volume. The equation expressing this law is called the equation of continuity.

A very small parallelepiped of water within which covers the solid nucleus of the earth is acted upon by accelerative forces arising from pressures estimated in the directions of three rectangular coordinate axes whose origin is at the centre of the earth: the first is supposed to be parallel to the axis of rotation, and the others in the equator plane of the equator, one being directed to the equinoctial point and the other at right angles to that direction. The pressures are supposed to arise from the attraction of the earth, from the angular velocity of its rotation, and from the disturbing forces, and to tend towards the origin of the coordinates.

These pressures, which are expressed by partial differential coefficients relatively to $x$, $y$, and $z$, in the coordinate axes, are subtracted from the accelerative forces arising from the attraction of the earth, and the perturbations exercised by the sun or moon, by which the molecule would be made to recede from that origin; and the differences in the directions of the axes are represented by

$$d\tau = \frac{dy}{dt}, \quad d\sigma = \frac{dz}{dt}, \quad \text{and} \quad d\psi = \frac{dx}{dt}.$$ 

In these equations of motion the partial differential coefficients representing the pressures are transformed into others depending on the distance of the molecule from the centre of the earth, and on its latitude and longitude; while the perturbations of the sun or moon in the directions of the coordinate axes are expressed in terms of the right ascension and declination of the disturbing body, and also of the distances of the latter from the particle disturbing the earth. The first result is that the expression for the altitude of a molecule of water above the mean level, in consequence of the perturbation produced by the sun or moon, consists of three parts (Méth. Ed, lib. iv., c. 1); the first does not depend on the rotation of the earth, and indicates a tide which goes through its changes in a long period; it may consequently be disregarded. The second depends on that rotation and on the hour angle of the disturbing body: it indicates the diurnal tides, or those which take place when the celestial bodies are on or near the meridian, above the horizon, and which follow one another at intervals of twenty-four hours for the sun, and about 24h. 50m. for the moon. The third depends on an angle equal to the double of that on which the second depends; and consequently it represents the semi-diurnal tide.

But the subject of waves and tides has been treated in conformity to the theory of undulations by Mr. Airy, the astronomer royal, in a valuable essay which is published in the Encyclopaedia Metropolitana. The investigations, though admitting of general application, are particularly adapted to the phenomena of tides in rivers and arms of the sea; and they are conducted by an analysis within the reach of persons acquainted with the ordinary processes of the calculus of finite differences.

As in the theory of La Place, there is formed an equation of continuity, which is founded on the equality of a rectangular parallelopiped of water at rest, to the oblique parallelopiped formed, when the water is in a state of disturbance, by the new positions of the eight particles constituting the angular points of the former parallelopiped. But, as the water is supposed to be in a rectangular canal, the extent of the parallelopiped in the direction of the breadth of the canal is supposed to be constant; and therefore it is sufficient to assume the equality of the parallelograms which form a side of each in the direction of the length of the canal.

The canal being of uniform depth, the equation of continuity is expressed by

$$Y = \int dX \frac{\partial}{\partial x}$$

where $x$ and $y$ are respectively the horizontal and vertical coordinates of a particle of fluid, and where $X$ and $Y$ are respectively the horizontal and vertical displacements of the particle by the action of the disturbing forces: the equation expresses a relation between those coordinates and the disturbances or displacements.

An equation of the pressure experienced by any particle from the forces which act upon it is next found in the following manner. Let $p$ represent the pressure in every direction on the lower part of a disturbed molecule of water in consequence of the height or weight of the filament of particles above it: then, the vertical coordinate of the particle being $y'$ or $y + y'$, suppose in the element $dt$ of time the vertical coordinate to become $y' - by'$ (the vertical height of the filament above the molecule in that direction being increased by the general revolution of the earth). Then, the pressure on the upper part of the molecule will be greater than before, and may be represented by $p + \frac{dp}{dy'} y'$; consequently the molecule may be supposed to be pressed downwards by a force represented by $\frac{dp}{dy'} y'$. Now, in order to render the expression for the hydrostatical pressure homologous to that which is employed for the force of gravity, it must be considered as accelerative, or as a motive-power divided by the mass; and therefore the accelerative pressure downwards becomes $\frac{dp}{dy'} y'$ being added to $g$, representing the force of gravity and supposed to be constant, there arises $\frac{dp}{dy'} y' + g$ for the whole acceleration of the molecule downwards; hence there is obtained the equation

$$-\frac{dp}{dy'} = \frac{dy}{dy'} + g.'$$

The equation, being integrated between the limits for the bottom of the basin and the top of the water, gives the hydrostatical force by which a vertical filament of water descends, or that by which it is carried forward horizontally.

Let the slender column of water above the molecule have a horizontal breadth equal to $h$ in the direction of $x$; then the horizontal pressure in front, by which the column is forced backwards, will exceed the pressure by which it is carried forwards by a force represented by $\frac{dp}{dx} h$, or by an acceleration represented by $\frac{dp}{dx}$; therefore the horizontal acceleration forwards is $-\frac{dp}{dx}$; if extraneous forces, as the attraction of the sun or moon on the molecule, and the effects of friction, be together represented by $F$, when estimated in the direction of $x$, there arises the expression

$$F - \frac{dp}{dx}$$

for the whole acceleration forwards; then the equation of motion becomes

$$d\tau = \frac{F - \frac{dp}{dx}}{dt}$$

which gives relations between the terms $X, Y, x, y,$ and $t$. This equation of equal pressure and the equation of continuity constitute the theory of the motion of fluids in case of uniform horizontal motion.

The general equation representing the disturbance or displacement of a particle of water is the same as that which expresses the disturbance of a particle of light.
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the 'undulatory theory'; and, in order to indicate oscillatory motion, both the horizontal and vertical displacements are represented by terms containing the sines or cosines of angles depending on the time \( t \).

If it be assumed that

\[ X = R \cos (nt - mx) + S \sin (nt - mx), \]

\( R \) and \( S \) being functions of \( y \), the above equations of continuity and of equal pressure give, on the supposition that gravity is constant, that no extraneous forces act, \( Y \),

and retaining for the present only the first power of \( \frac{dX}{dt} \), or of the horizontal displacement,

\[ \frac{d^2 X}{dy^2} + \frac{d^2 X}{dx^2} = 0. \]

From these two equations are obtained the values of \( X \) and \( Y \) in terms of \( A \cos (nt - mx) \) and \( B \sin (nt - mx) \).

These values will not be altered if \( mx \) is increased or diminished by one, two, three, &c., whole circumferences,

that is, if \( x \) is increased or diminished by \( \frac{2\pi}{m} \), &c.,

while \( t \) remains the same; therefore \( \frac{2\pi}{m} \) is the value of the increments of \( x \) which correspond to points where the particles of water are in the same condition with respect to disturbance, that is, \( \frac{2\pi}{m} \) is the length of a wave. Again, the values will not be altered if \( nt \) is increased or diminished by whole circumferences, that is, if \( t \) is increased or diminished by \( \frac{2\pi}{n} \), &c., while \( x \) remains the same;

therefore \( \frac{2\pi}{n} \) is the increment of time which corresponds to the particles of water being successively in the like state of disturbance, that is, \( \frac{2\pi}{n} \) is the period of a wave, or the time between two successive formations of a wave-summit at the same place. Therefore \( \frac{2\pi}{n} \) is the velocity of the wave; and, from the value found for it by the theory, it follows that the velocity depends on \( m \) and on the depth of the water; the latter being constant, the velocity depends on the length of the wave, or it depends on the time in which a particle of water makes a complete vibration. If the wave is divided or the time of its vibration is given, the velocity will vary with the depth of the water.

From a table of the computed velocities of waves of different lengths, and with different depths of water, it is found that when the length of the wave is not greater than the depth of the water, the velocity of the wave is proportional to the square root of its length: also when the length is not less than one thousand times the depth of water, the velocity is proportional to the square root of the depth, and is the same as that which a body would acquire in falling from rest through a height equal to half that depth. The greatest horizontal and vertical displacements of a particle being computed for different values of the length of the wave and the depth of the water, it appears that when the latter is great, compared with the former, as in the open sea, the motion of the water below the surface is very small compared with the motion at the surface; and at a depth equal to the length of wave, it is only about \( \frac{1}{6} \) of the motion at the surface. On the same supposition the greatest horizontal motion is equal to the greatest vertical motion. When the length of the wave is great compared with the depth of the water, as in tide-waves, the horizontal motion of the particles is nearly the same from the surface to the bottom, and the vertical motion varies from a maximum at the surface to a minimum at the bottom. On the same supposition the vertical motion of the superior particles is much less than their horizontal motion.

The movement of a particle of water near the surface may be determined from the values given by the theory to \( X \) and \( Y \): if the waves are small, so that \( A \) and \( B \) may be considered as equal to \( B \), we have \( (X^2 + Y^2)^{\frac{3}{2}} = C \), a constant; which, being the equation of a circle, it follows that the particles move in the circumference of a circle whose radius is \( A \); but if the length of the wave is great compared with the depth of water, the equation is that of an ellipse. These last deductions from the theory are conformable to what has been observed in experimental waves, as above mentioned. It follows that, in a long tide-wave flowing up a channel, the direction of the wave's motion is the greatest at the summit of the wave, that is, at high-water: at the place of greatest depression, that is, at low-water, the motion is most rapid downwards; and at the mean level the water is for a time stationary.

In investigating theoretically the phenomena of waves by whatever cause produced, if the lengths of the waves are very great compared with the depth of the canal in which they move, it becomes necessary to retain the second and even higher powers of \( \frac{dX}{dt} \) or of the horizontal displacement, in the equations of continuity and of equal pressure; but the vertical oscillations being then small, the value of \( \frac{dY}{dt} \) may be neglected. Then, if the perturbing actions of the sun and moon are not considered, the integration of the differential equation of equal pressure gives a new form of the vertical displacement at any point, or the height of the wave above the mean elevation, in terms which contain \( k \), \( \sin (nt - mx) \) and \( kx \sin (2nt - 2mx) \), \( k \) being the depth of water in the canal.

Tracing an undulating line whose ordinates are the values of the greatest wave-length, corresponding to the horizontal distance \( X \), the horizontal distance from the mouth of the canal, which is supposed to open to the sea; it is found that, near the opening, the front and rear slopes of the waves are of equal lengths and of similar forms: but as the distance from the sea becomes greater, the front slope is shorter and steeper, and the rear slope longer and more gentle: at a great distance the latter becomes nearly horizontal in the middle, and at length it divides into two gults, so that the wave becomes double. Near the sea also, the time occupied by the passage of the wave is as the time occupied by its descent: at a certain distance the rise takes place in less time than the descent; and at a still greater distance the descent, after having been rapid, is checked, and changed into a rise, to which another rapid descent succeeds; so that there seem to be two tides, or elevations of the water, in the upper part of the canal, corresponding to one elevation at the mouth.

The value of \( \frac{dX}{dt} \), or the velocity of the particles of water, is found also to contain the sines and cosines of the angles above mentioned; and, substituting in these the greatest wave-length and the greatest wave-elevation, it is found that the velocity corresponding to the first of these values, that is, at the top of the wave, is less than the velocity corresponding to the other: but the former, the first case, is up the canal, and in the other case down it; and these are nearly the same as the greatest velocities of the water; consequently the velocity of the flow of the wave in the canal is less than that of the ebb. The preceding conclusions relate to the case in which the water was at rest in the canal previously to the formation of the wave: in the event of the water having a general movement towards the sea, the time in which the wave rises, or the time from low-water to high-water, is still less than the time of the descent; but the difference between the two is two-thirds of that of which the waves would have in a rectangular bed of equal breadth and depth.

When water, still supposed to be in a canal of uniform breadth and depth, is disturbed by extraneous causes, as the attraction of the sun or moon, the term \( f \) in the equation of equal pressure is conceived to consist of two, one represented by \( H \) sin. \((nt - mx)\) for the horizontal inertia of a much force in the direction of \( x \), and the other by \( G \cos. (nt - mx) \) for the vertical intensity; and the equation for \( \frac{dX}{dt} \) being then satisfied by the equation \( X = g \cdot f \cdot y \) sin.
\[ (t - \mu z), \text{ in which } \phi'(y) \text{ represents the second differential coefficient of a function of } y \text{, there is obtained a value of } X \text{ at the surface of the fluid in terms of } \sin \left(\frac{t - \mu z}{2}\right), \text{ and } 2 \cos \left(\frac{t - \mu z}{2}\right). \]

The wave thus indicated depends upon the continuity of the actions of the extraneous disturbing forces, and is designated by Mr. Airy the forced-tide wave. This wave, he observes, would cease to exist if those forces were to cease, and in such a case the free tides would continue as before.

Tides, Taking into account the effects of friction, which may be considered as a horizontal retarding force proportional to the velocity, and which may consequently be represented by \( -\frac{dX}{dt} \); the value of \( X \) contains terms involving the sines and cosines of angles represented by \( t - \mu z \) and \( t \pm \phi z \), and the expression for the vertical elevation contains the sine and cosine of \( t - \mu z \). The analytical expression remaining from the production of this additional perturbation indicates the fact that the disturbance of the water takes place later than the times at which the disturbing forces arising from the action of the sun or moon are the greatest; and this circumstance gives to the wave theory an improvement over those of Newton and Laplace; for in both these theories the greatest tides take place when the force is the greatest.

In the case of a canal bounded at both extremities, the expression for \( X \), the horizontal disturbance of a particle, is found to be the sum of two parts: one of which is the horizontal motion due to the motion of the particle of water, the combination of free tide-waves, probably caused by ex-1

The theory of which a brief outline has just been stated, applies to what are called negative waves by a mere change of the sign of the expressions of the disturbing factors. These waves are depressions below the general surface of the water, and, like the others, they have a progressive motion. Such waves, for example, are those which are formed by the paddles of a steam-boat.

All the theories concur in showing that the difference between the diurnal and semidiurnal tides is great in middle latitudes, and small at the equator and poles; and in this respect they are at variance with the actual phenomena. From observations it is found that this difference is as great at certain places near the equator as near the latitude of either tropic: it has also been found to be great at Petropawlowski and in Norfolk Sound, while in Europe it is small. It has been attempted to account for the latter circumstance by assuming that each tide-wave in this part of the world is composed of two, which flow towards the same place in opposite directions at intervals of about twelve hours. It is supposed that the semidiurnal waves of these tides, being in the same state or phase, produce together a tide whose diurnal wave is in opposite states; so that the superior high tide of one wave coinciding with the inferior high tide of the other, they together produce a mean height of water differing but little from that of the united semidiurnal tides.

For the details of the investigations relating to the theories of the oscillations of water, discussions of the experiments which have been made by Mr. Russell and others on waves in artificial canals, methods of making observations on tides, and accounts of the particular tides of various seas and rivers, see the above-cited work 'Tides and Waves, in the Encyclopaedia Metropolitana.'

**WAVELLITE.** Hydargillite, Devonite, Lasonite. This mineral, which is a phosphate of alumina, was discovered by Dr. Wavel, whence its name. Occurs in globular concretions from a very small size to that of an inch in diameter; these consist of small slender crystals radiating from a centre, with imperfect terminations. Primary form of the crystal a right rhomboide prism. Cleavage parallel to the lateral planes, and the greater diagonal of the prism. Hardness, 3.5 to 4.5. It is of a soft texture and is nearly white; grey, brown, yellow, and green of various shades. Lustre vitreous, somewhat pearly on the cleavage planes. Transparent, translucent. Specific gravity, 2.3 to 2.5.

Before the blow-pipe, it swells and becomes snow-white; when powdered, it dissolves without effervescence in nitric and sulphuric acids when heated, and gives out an acid which slightly corrodies glass.

This mineral is found at Barnstaple, Devonshire; near Cork, Ireland; in Cornwall, Germany, Brazil, &c.

**Analysis of the mineral from Barnstaple,** by (1) Fuchs, (2) Berzelius:—

<table>
<thead>
<tr>
<th>Substance</th>
<th>(1)</th>
<th>(2)</th>
</tr>
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<tbody>
<tr>
<td>Phosphoric acid</td>
<td>32.84</td>
<td>32.90</td>
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<tr>
<td>Alumina</td>
<td>37.16</td>
<td>35.75</td>
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<tr>
<td>Water</td>
<td>28.00</td>
<td>28.90</td>
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<tr>
<td>Fluoric acid</td>
<td>2.06</td>
<td>2.06</td>
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<tr>
<td>Lime</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Oxides of iron and manganese</td>
<td>1.25</td>
<td></td>
</tr>
</tbody>
</table>

**WAVENY. [NORFOLK.]**

**WAX.** There are many varieties of this substance, but the term used by itself means bees'-wax. This wax is the product of the bee's pollen elaborated by the bee; but it is now admitted to be a secretion from its ventral scales. With this substance the comb is constructed, the cells of which are hexagonal; from the comb the wax is extracted chiefly by pressure, then melting it in hot water, by which the impurities subside, and the wax is poured into and allowed to cool in moulds.

The properties of wax, or rather of yellow wax, are— that it has a yellowish or orange colour; its odour is peculiar. Even in winter it is soft enough to be indented by the nail, and in summer it is much softer. Its density varies from 0.960 to 0.965. It melts at about 143° to 150° Fahir. It is a nonconductor of electricity.

White or Bleached Bees-Wax is obtained, as stated by Dr. Pereira (Mort. Med., p. 1391), by melting yellow wax by means of steam, running it off, while in a melted state, into a trough called a cradle, perforated at the bottom with holes, and placed over a large water tank, at one end of which is a revolving mill, almost wholly immersed in water. By this means the wax is solidified, converted into a kind of ribbon, and conveyed on the surface of the water to the other end of the tank. These ribbons of wax are here lifted out and conveyed in baskets to the bleaching grounds, where they are exposed to the air for one or two weeks (according to the state of the weather), being turned every day. The wax is then remelted, re-ribboned, and re-bleached; it is subsequently refined by melting in water acidiudated with sulphuric acid.

Pure wax thus obtained is nearly devoid of smell.
WAX

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When wax is strongly heated it is decomposed, yielding the usual products of non-saturated vegetable matter. According to Hess, when wax has been deprived of its colouring matter by ether, white scales of wax are procured, which yield by analysis:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>80-79</td>
</tr>
<tr>
<td>Oxygen</td>
<td>6-08</td>
</tr>
<tr>
<td>Others</td>
<td>00-00</td>
</tr>
</tbody>
</table>

Wax is extensively employed both in its original and bleached state; in the latter it is used not only for candles, but also in numerous cerases, ointments, and plasters.

Myrtle Wax is a vegetable product, obtained from the berries of the Myrica cerifera, a native of the United States of America. It is a soft, mobile, brownish mass, in pieces of various sizes and shapes; it is non-saponifiable fat, and the wax, when boiled in water, is skimmed off, and re-melted. It is greenish, diaphanous, and bleaches perfectly in the sun; it is so brittle that it may be pulverized. Its density is 1; it melts at about 69 Fahr., and yields wax products; thus, the wax-palm of the Andes (Cercozyon Andicola) is a tree which grows to the height of 190 to 180 feet, and yields a mixture of wax and resin, of which the natives make candles. From the resin Bonastre has extracted a substance which he calls cereozine. Another variety is produced by the Wax-Tree.

WAX-TREE, the common name of the plants belonging to the genus *Vermes*. This genus was named in honor of a merchant, a merchant of France, and belongs to the natural order Hypericaceae. It has a 5-parted calyx, with five petals villous inside, a membranaceous berry, five styles with peltate stigmas, numerous stamens disposed in five bundles, which are placed opposite the petals, and alternate with these the name of the androecium is roundish, 2-celled, and branching lengthwise; seeds with a double covering. The species are either shrubs or trees, having quadrangular opposite branches with entire leaves full of glundular and pellucid dots. The flowers are of a yellow or greenish colour. All the species afford a yellow juice, which is sometimes collected and sold in the markets under the name of American Gamboge. All the known species, except one, which grows in Africa, are natives of various parts of South America. The species in greatest request are the following:

*Vermes guianensis*, Guiana Wax-tree, has a quadrangular stem, ovato-lanceolate or oblong leaves, which are dilated at the base and fleshy and smooth beneath; the petiole is short, the calyxes ovate, the stamens ciliated, the stamens numerous, and the berry ovate. This plant is a native of Guiana and Brazil. It is a shrub about eight feet in height. The Cayenne Wax-tree (*V. cayennensis*) has dotted ovato-lanceolate leaves, and few-flowered panicles of flowers. It attains a height of about ten feet, and all parts of the plant yield the resinous juice.

*V. setifera*, has an angular stem, lanceolate leaves, coriaceous at their base, with very short and thick petioles, and a multifid pulvinule. It is a native of Guiana, and yields the juice in great abundance. *V. ladifolia*, with broad dotted leaves and dotted petals, is another species of Guiana, which yields great quantities of the juice when cut or broken. The juice when dried is purgative in doses of about seven or eight grains.

**WAX SEALING.** The best red sealing-wax is composed of shell-lac, Venice turpentine, and cinnabar. The shell-lac by itself is rather too brittle, and the turpentine is added to remedy that defect. The proportions are about four parts of lace, one part of turpentine, and three parts of cinnabar, by weight. When the lace and turpentine are well stirred in the proper proportion, and the whole well mixed by stirring it about. The round sticks of sealing-wax are made by hand on a smooth slab of marble or plate of metal, which is kept at an even and moderate temperature by a Brazier or chafing-dish placed beneath it. The liquid sealing-wax having been partially /cooled, a quantity sufficient to make about six sticks is rolled out on the slab or plate into one long stick, which, when of proper diameter, is cut into lengths, and transferred to the sealing-maker, who rolls it over a cold slab beneath a smooth piece of wood or metal. The sticks are now to be polished, which is done by holding them successively between two contiguous charcoal fires till the surface is fused, which produces the polish. One end is then softened by being brought near the flame of a lamp, in order to receive the impression of the maker's name. This manipulating process is only applied to the round sticks; those which are oval and ornamented are formed by pouring the liquid sealing-wax in molten wax into a mould, and while partly cooled, is added to another mould made of steel, out of which they are taken polished and fit for use.

For the best sealing-wax, the best and most colourless shell-lac is used, the finest Venice turpentine, and the best cinnabar powder, or that of the natives of the Guiana. For the best black sealing-wax, the finest ivory-black is substituted for the cinnabar. For sealing-wax of inferior quality, not only the darker-coloured shell-lac is used, but other resins of less value, common common turpentine, and more, is added, as the deviations in these are now caused by such red lead alone, and lamp-black is used instead of ivory-black. Other colours are given to sealing-wax by mixing it with other substances, for the most part, different metallic oxides.

The sealing-wax, which is formerly in general use for sealing letters and legal documents, and which is still occasionally used for the latter purpose, consists of about four parts of bees-wax, one part of Venice turpentine, and as much cinnabar or other colouring material as is required to render it the tint which is desired.

Sealing-wax consisting of a red with a red colouring matter seems to have been first brought from the East Indies. The earliest seals of this material that have been found in Europe are of the date of about 1630. The composition of these was soon discovered by the Dutch, French, and Germans; and its superiority to bees-wax soon brought it into general use. The quantity of lac imported into this country, chiefly for making sealing-wax, is very great. (Lac.) The Dutch call it *zegel-lak*, and the Germans *ziegel-lack*; it is procured from the antlers or shell of animals; it is boiled in water, which, when cooled, is sufficient to melt the wax; it is then poured into a mould, which is at the top of a brazier, and cooled, and is finally polished. The French call it *cire-d-cacheter*; the softer material, which is really wax, they properly call *cire-d-sceller*. The name was probably given to sealing-wax by the French and English before its composition was known.

The Egyptians appear to have used for sealing a kind of earth, probably containing bitumen, which Hieredotus (ib. 38) calls sealing earth, *γαναυτικος*, on which an impression was made by a sealing-ring, *καυστριον*. A similar substance was used by the Romans (cretula); but the material commonly used by the antients, at least in later times, was wax.

(Beanbeck's History of Inventions, vol. 1; Dictionnaire Technique des Arts et Metiers; Handmaid to the Arts, vol. ii.)

**WAY.** Chimir (from the French Chemin), is a term used to denote either a right, in one person or more, of passing over the land of another, or the space over which a right in the former sense a way is an incorporeal right of the class called easements—the corporeal right, the ownership of the soil, and of all its products, superficial and mineral, remaining in the party in whom such ownership would have been, supposing no right of way to have existed, and it was also held as a personal right.

Five species of way are known to the law: 1, a footway, for persons passing on foot only; 2, a horse-way, for persons passing on horseback, but including a footway; 3, a drift-way, for driving cattle; 4, a carriage-way, for leading or driving carts and other carriages, always includi
A way of necessity is limited by the necessity out of which it has arisen. Thus, where the party to whom such a way is impliedly granted, or by whom it is impliedly recognized, becomes possessed of some other interest in the land, equally direct, the way of necessity is gone.

The particular rights of the grantee of a private way continue to exist notwithstanding the owner of the land may have dedicated to the public as a highway.

By the general enclosure act (41 Geo. III. c. 102) all roads, private as well as public, within the district, not set out by the commissioners, are declared to be extinguished.

The grantee cannot throw the burden of repairing the ways upon the grantor; and if the grantor is authorized to use the land, or has a right of way over it, the grantee is entitled to go upon the adjacent land, when the direct way is impassable. It is settled (Nott. & Selm., 367); whether he may so do where the state of non-repair is caused by the wrongful act of the occupier of the land, or where the liability to repair rests upon the latter, does not appear to have been decided.

If the occupant of the land on which a private way passes, or any other person, obstruct the way, the party entitled to the way may remove the obstruction, and he may also bring an action on the case, or, in some cases, an action of covenant against the obstructor. On the other hand, the grantor of the land must remove any right of way, by a grant of trespass against the person exercising the alleged right, the defendant may plead in justification a title founded upon prescription, grant, reservation, or statute.

II. Between public ways and public ways stand what may be called quasi-public ways, par-taking of the qualities of both, but differing, in some respects, from each. By some writers these are classed amongst private, by others, as public. They are more properly to constitute a distinct intermediate class. Sometimes the inhabitants of a town, &c. have immemorially used from their town, &c. to a church or market. A right of this description cannot, in modern times, be created. It must be hereditary, inter alia, as inhabitants, as such, are not at this day capable of taking any interest by grant; nor can it, like a public way, be created by dedication, as the dedication of a way can only be to the public at large. Such a right therefore can exist only by grant or prescription.

III. A highway is created where the owner of the soil has, by express words or by some act done or forborne, declared his intention that the public shall have the use of a way over such soil. The dedication of a way to the public is frequently created by statute, and also by the acts of the party, as the throwing down of fences, or from mere tacit acquiescence where the acquiring party is in possession of the land, and therefore has the means, if disposed so to do, of preventing the user of the way. The highway is usually created by statute, or the party dedicating should have a sufficient interest in the land to warrant such dedication. If he has a less estate than a fee-simple, his dedication will not bind the remissor. But it would also appear that the owner of such a limited estate could not even dedicate a highway to the public for the limited period of his interest in the soil, and that his attempted dedication, however distinctly and formally made, would amount to nothing more than a license revocable at the will of the owner.

Whenever there is no express dedication, the presumption of an intention to dedicate, arising out of the conduct of the party, may be rebutted; as by showing that when the public were first admitted a bar or a chain was occasionally thrown across the way, or the party forbade the use of the way. If the road be a continuation of a public road, the grantor must have the same extent of interest in the land and the way.

The party to whom a private road is allotted under the general enclosure act, has a statutory right of way. Where the party entitled to a way becomes the owner of an estate, the party passes across the estate, distinguished if the party has the same extent of interest in the land and the way. But if the one be held for an estate different in extent of duration from the other, the right is only suspended during the union of the two interests, and on the termination of the estate the right of way is extinguished by the unity of possession, it will, in some cases, revive upon a severance of that unity as by partition amongst parceners, &c.

A private right of way may also be extinguished by a deed of release executed by the party entitled to such a way, or by a declaration made by the party that he has no such right.
[Town] in which the way is situated. But particular persons may be liable to repair a highway. This special liability may exist by reason of enclosure (ratione coactionis), against parties who have enclosed the sides, or one side of the road, and have thereby lessened the facilities for breaking out into the adjoining lands where necessary; or by reason of the public lands (ratione tenentis territorii), which have by some means become chargeable with the burthen. In the case of a corporation aggregate, a liability to repair may also be established by prescription only, or antiquity, without enclosure or tenure.

An owner may sue another owner, whether a private or a quasi-public way, for the destruction of any part of a highway, and thereupon the court may grant an interlocutory or a final injunction, or it may direct the abatement of the obstruction, or award damages. If the perpetrator is a public officer, or a person acting under or by the authority of a public officer, the judgment is binding on the public officer, although not on the perpetrator. (§ 11.)

The regulation of the highway is a public and a general matter, and the liability to repair is a general liability. (§ 12.)

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By the 23rd section of the act, no road or occupation way made at the expense of individuals or corporations, is to be deemed a highway which the parish is liable to repair, unless the road is made in a manner prescribed, and certain notices are given, and the road adopted by the parish. This provision does not, however, appear to shorten the right of the public to a highway dedicated to the public without the observance of the formalities here required for the purpose of throwing upon the parish a liability to repair.

The power of a way over water, either private, quasi-public, or public, if the course of the water alter by sudden or gradual change, the way is continued over the new course. Every navigable river, arm of the sea, or creek, is a highway for ships and boats.

WAY, LIVY. [Museum.] WAYS, ROMAN. Our old chronicle give this name to four principal ancient highways which they suppose to have been either originally formed by the Romans in Britain during their occupation of the country, or at least have been completed and perfected by that people upon lines of road for the greater part already traced and used by the former inhabitants. The names however by which the four highways are distinguished appear to be Saxo in form, although they may be Roman or British in etymology. One of them (the Ikenild) is supposed to have proceeded from Dover to Chester; or, according to another hypothesis, to Chester-le-Street, in Durham, passing through Canterbury, London, and Vernam, from which last-mentioned town it had also the name of Watling after the name of the Roman goddess of the same name. The second is called the Icknield-street or Icknield road, and is now called the Oxford Road at Tyburn, and proceeded to the west of Westminster, through Hyde Park and St. James's Park, to the Thames, which it crossed at Old Palace-yard. The common opinion however is, that it passed along the line of the road which is still called in London the Icknield-street or Icknield road. The third is called the Watling Street, and is supposed to have been the Romans's road from York to London, or its neighbourhood, is supposed to have been over Hampstead Heath, to Edgeware, and hence, through Verulam (or St. Alban's) and Dunstable in Bedfordshire, to Stoney Stratford in Northamptonshire, and to join the north-western road at Towcester, or at least, to be used by them. From this point its course is disputed, some making it proceed in a north-western direction to Chester, others carrying it due north to York and thence to Chester-le-Street; whence some imagine it to have been latterly extended to Lancaster and Fulkirk in Scotland, or even as far as to Caithness, at the extremity of the island. The Icknield or Lohenild Street is said to have been so called from its commencing on the eastern side of the island in the country of the Iceni, mentioned by Tacitus, and supposed to be the same with the Sinum of Ptolemy, who appear to have occupied Norfolk, Suffolk, and Cambridge. On the supposition however of London Stone having been the central milliarium where all the great roads of the country met, a branch of the Icknield-street is supposed to have passed through Aldgate, and to have been other wise known by the name of the Vicinal Way. The course of the Icknield to the westward is extremely obscure: nearly all that has been even conjectured on the subject is that it may have been continued in the same manner as the other roads of the same class, that it continued to be extended in the direction of Staffordshire to the western coast. It seems most probable that, while Watling Street ran directly north to Chester-le-Street, the Icknield Street, Thame, and Banbury, and the Bracelin or campaign road of the same name, would have passed through Aldgate, and to have been other wise known by the name of the Vicinal Way.

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which it may have entered that is now called Holborn.
Finally, the Fose is supposed (to have taken its name) from the beginning of the Totnes in Devonshire, and passing through Bristol, Gower (near which place it seems to have crossed Ermion Street, Chipping Norton, Coventry, Leicester, and Newark, to Lincoln. If it was carried from hence to London, probably by the Bishopsgate Street. Nothing however can be more obscure and uncertain than the whole subject of these supposed Roman highways. Camden treats it with a sort of contempt, declining to venture upon any pursuit after the course of the four parts of the road only, that the road; who will have only four ways of this sort, are in that, without any question, in an error.

The Itinerary of Antoninus makes fifteen itineraries or roads in Britain.

ATWODI, or WOYEVODA, is a Slavonian appellative from Vogno, 'war, and ovito, 'to lead'; and consequently it has the same etymology as the Latin Ducis, the Saxon Heretog, and the modern German Herczog.

This name was originally given to military commanders in different Slavonic nations; and, in Poland each palmate or province had its woyevode, whose duty was to command in time of war the pospolite, or ancient ban of his province. The woyevodes had in time of peace a certain administrative authority, and composed the first class of the military magnates of the time. The woyevodes were not in this respect superior in rank to the Comitum Palatii of the empire, they were translated in Latin by 'palatine.' [POLAND, Constitution q.f.]

In the earliest times of Russian history the appellation of woyevodes is given to high military commanders, and of which the Slavonic word woyevodes: the first were simply generals, and Peter the Great abolished this ancient Slavonian appellation and introduced that of general. The civil woyevodes were divided into provincial and town woyevodes, and they were governors of provinces and cities. This appellation was changed only under the reign of Catherine II. into that of governors, commandants, &c.

The appellation of woyevode was assumed for some time by the rulers of Moldau and Wallachia, who substituted for woyevodes the Greek title of despota, and finally its Slavonian translation, hospodar. The princes of Transylvania had also sometimes the title of waiwode, which was also given to some minor Turkish officers.

WEALDEN FORMATION, the uppermost series of the strata usually included by English geologists in the 'Oolite system.' [GEOLOGY.] This arrangement is justified by the plants, fishes, and reptiles which occur in its upper strata, for with the exception of a few species, more allied to oolite than to cretaceous types of structure. But as the Wealden deposits are of fluvial or origin principally, we do not find in them the usual shells or crinoids of the oolites, but a peculiar series, of which a few species are found in other deposits. The exact settlement in other countries which is contemporaneous with the fresh-water Wealden-beds, or whether any such equivalent is known, appears doubtful.

(Mantell, Geology of Sussex; Austin and Pitton, in Streets of Geol. Society, 1843.)

WEALTH is the means of obtaining the products of labour. An individual is rich or poor according to the quantity of the necessaries and luxuries of life which he can purchase; and the more or the less, the aggregate of his possessions, means of obtaining such advantages. Labour is the source of wealth, and every addition to its productivity tends to increase wealth, by lowering the cost of commodities, and rendering them more easy to be obtained. Political encouragements are the means of procuring the increase of national wealth, and of removing obstructions to its development; and it is the purpose of this article very briefly to enumerate and explain some of the chief principles of that science, which are directly connected with the production of wealth. The first object is to encourage industry. This is best done by leaving it free to obtain an adequate reward, by protecting all persons in the enjoyment of such reward, and in reducing the amount or value of it as little as possible. All attempts to secure or extend the enjoyment of wealth can only be effectually given in a free state, and under a civilized government, where property is secure, and labour free from restraint. Insecurity of person or property, arbitrary and oppressive taxes, monopolies, restrictions upon the free exercise of skill and enterprise, are all impediments to the increase of wealth: they discourage industry by diminishing the inducement to exert it, and they restrain its productive powers when exerted by thwarting the natural intelligence and activity of man in the pursuit of his own interest.

Whatever gives the best direction to industry, and facilitates its operations, is favourable to the increase of wealth. Thus the separation of men into different employments is highly recommended, as it develops industry in every branch, to the advantage of laborers in their respective arts, and causes a general economy of time. Still more useful is capital, without which division of labour cannot be extensively practised. It puts labour in motion; combines the work of many hands, and, by giving means to increased aid to human labour, and finally distributes its benefits, as it has assisted in producing facilities to the ready and effective application of capital obviously add to its utility; as credit, for example, which lends to one man the capital of another when he can employ it more profitably; and the various descriptions of money (the representatives of capital) which facilitate and cheapen the exchange of labour and its products between man and man. The higher the general rate of interest, the more capital is capital likely to be accumulated; because the majority of men are usually desirous of accumulating, and the means of doing so are evidently increased by high profits. If a profit of five per cent, upon a man's capital engaged in business of his own, by the time of his business without any diminution of his capital; a profit ten per cent, would enable him, at the same time, to add to it five per cent, annually, to be employed in further production and accumulation. It is clear that there will be no increase of capital, as long as in which the rate of profits does not leave a surplus beyond the necessary expenses of living. In such a case capital would be stationary, while the population to be supported by it would be on the increase, and the advantages of division of labour have already been noticed. The enriching properties of commerce are of a similar character. By distinct employments labour is made more productive; by commerce, the natural products and the peculiar arts of different countries are exchanged with mutual benefit and economy of labour to all. In France and Spain the grape, grown in the open air, provides delicious wine; in England, to make such wine (if it could be made at all), the grape must be grown in hot-houses. In England cotton goods are made by men of the world, in the country in the world. If France and Spain would buy them, they would save annually whatever excess of price they pay for similar goods made by themselves; while the capital and labour now applied to the Berlin cotton factories could be employed in the production of that article. To understand the effects of free commercial intercourse, it is only necessary to keep in view the analogy to the common dealings of life. No man thinks of making anything himself if he can buy it for less than he can make it. He continues working at his own employment, and buys the article he wants. If he did otherwise, he would lose his own profitable time and labour, and the article made by himself would take still more out of his pocket than if he had bought it; while its quality would probably be inferior, by reason of his own want of skill and practice in that particular work. The same principle applies to nations. Commerce extends to all countries the happy results of division of labour, instead of confining them to particular communities.

The last circumstance directly favourable to the increase of wealth, which need be noticed, is a cheap and expeditious communication, both in the interior of countries and with all parts of the world, for the carriage of merchandise. Every deduction from the cost of an article is an addition to the national wealth, and the expense of transit forms an essential part of the ultimate charges to the consumer. The extraordinary reduction of the cost of transport may be ascribed either to the exhaustible energies of a country. The extraordinary reduction of the cost of transport may be ascribed either to the exhaustible energies of a country. The extraordinary reduction of the cost of transport may be ascribed either to the exhaustible energies of a country. The extraordinary reduction of the cost of transport may be ascribed either to the exhaustible energies of a country.
aggregate time thus saved to the community at large would exceed 2000 years, or, in other words, the saving may be estimated as equal to the value of the labour of one man for 2000 years, or of 2000 men for one year. The importance of cheap and rapid modes of commercial intercourse, in other points of view, need not be pointed out.

Inasmuch as, then, the possession of a general knowledge and intelligence must be noticed as an agent in the production of wealth. It is the mind and the disciplined will of man which render all the circumstances of the world available for his benefit; and in view of education chiefly as a social blessing, we should never forget to urge its merits as a producer of wealth, upon those who would regard its other recommendations with less favour.

WEANING, the act of separating a child from the paternal breast and placing it in a bottle. Artificial feeding is recommended a few hours after the birth of a child, the breast of the mother secretes milk for its nourishment. The milk that is secreted at first differs in some of its properties from the milk subsequently secreted, and has been called colostrum. Healthy milk under the microscope is found to contain globules of various sizes, which are perfectly spherical in form, swarming in a fluid in which are suspended no other particles; whilst the globules of colostrum are irregular and disportioned, some of them being very large and others very small; they are freely colored in color of a yellowish, or a yellowish-green, colour, which are very minute, and which consist of fatty matter and a peculiar mucus. The milk retains these characters for several days, and it has been supposed at this period to possess a purgative property, which excites the bowels of the child. Milk which has been secreted at the fifth day is simply meconium. When the mother is healthy, the secretion of milk goes on abundantly till the ninth or tenth month, at which time the infant is generally able to take some other kind of food, and the process of weaning may commence at this period. It is generally deferred from ill health or other causes, that the mother is not able from the first to suckle her child. In this case the child must be either transferred to another nurse or fed artificially. There are two possibilities for the nurse to pursue. In the choice of a nurse care should be taken that the infant is transferred to one whose age, size, and temperament resemble its own mother. There should also be an absence of actual disease or a tendency to hereditary disease, and of all habits likely to interfere with a due secretion of healthy milk. Where children are artificially fed or reared from birth by the hand, the greatest care and attention are required. The first requisite is that the child should have a food as nearly resembling its natural food as possible. In all other respects the milk of the other animals has been employed. That of the cow, as being most easily obtained, is most frequently used; but it would appear that the milk of the ox has nearly resembles human milk, and on that account, where it can be obtained, is to be preferred. The milk of a horse is of a different nature, by Dr. Darwin, the milk of the ass, is as fair, of the milk of the cow, the ass, and the sea, and may serve as a guide in the preparation of the food of children:

<table>
<thead>
<tr>
<th></th>
<th>Woman</th>
<th>Cow</th>
<th>Ass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casien</td>
<td>1-5</td>
<td>4-0</td>
<td>1-9</td>
</tr>
<tr>
<td>Butter</td>
<td>4-4</td>
<td>4-6</td>
<td>1-3</td>
</tr>
<tr>
<td>Sugar</td>
<td>0-7</td>
<td>3-8</td>
<td>0-3</td>
</tr>
<tr>
<td>Acid</td>
<td></td>
<td>0-0</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>88-0</td>
<td>89-0</td>
<td>90-5</td>
</tr>
</tbody>
</table>

The milk of the cow contains a much larger quantity of the casein, or nitrogenized principle, than that of woman or the ass, and requires dilution previous to its being administered to new-born children. At first two-thirds pure fresh water and one of cow's milk, with a small quantity of sugar may be employed. As the child grows older, the quantity of water should be gradually decreased till it takes milk alone. This food should be administered to the child at a temperature of about 88°, the heat at which the milk is produced by the mother. If the child is thus fed, a spoon should not be used, but some means should be had recourse to for administering the milk slowly, as the sucking-bottle, artificial nipple, &c. In feeding a child artificially, as in sucking, the first sign of insufficiency may be regarded as a sign that the child has had enough. On no account should children be fed again immediately after waking, a practice which is often extremely injurious.

If milk increases in size and strength, it requires in addition to milk, and at least ceases to require supplies from its mother. Although this is a perfectly natural process, it is often, from want of skill, or rather want of knowledge of natural laws, a source of painful disease to the mother, and sometimes even loss of life to the child. As a general rule, it may be stated that a child should never be suddenly weaned, and that the mother should allow the separation between milk and solid food of the better will be for both. The time for weaning must depend in some measure both on the development and health of the child and the state and health of the mother. With regard to the child, one of the first indications that weaning may be proceeded with is the appearance of milk teeth. This is indicative of preparation for other kind of food, and generally occurs in healthy children about the sixth or seventh month; and it is at this period that a gradual abstraction of the breast feeding will require sucking beyond the first year, although, where no ill consequences result to the mother, there is no objection to the child continuing at the breast till it is eighteen months or two years old. Where children are reared with some object in view, and present other signs of want of strength and delicacy of constitution, it is frequently advisable that they should remain a lengthened period at the breast. It is always necessary to take into consideration the health of the mother during the separation between milk and solid food, that an imperfectly secreted or diseased state of the milk which they would from immediate weaning, and under these circumstances of course the least evil is to be preferred.

In order that the weaning should be gradual, the child should be divided into two, or, if possible, three parts. On the first day, a little light food once or twice a day, and its supply from the breast should be proportionately diminished. If such a plan is pursued, the quantity of food administered by itself being increased whilst the supply from the nurse is diminished, it will not generally found the child will be experienced in entirely weaning the child at ten or twelve months old. After a child has been weaned its food ought principally to consist of liquid or semisolid substances. And for cow milk alone, or boiled with bread, thickened with ground almonds, or of a mixture given for the first few months. To these may be added, for the sake of variety, rice, tapioca, sago, and arrow-root, which may be made up with milk or water, or both; and water in the development of their teeth, and present other signs of want of strength and delicacy of constitution, it is frequently advisable that they should remain a lengthened period at the breast. It is always necessary to take into consideration the health of the mother during the separation between milk and solid food, that an imperfectly secreted or diseased state of the milk which they would from immediate weaning, and under these circumstances of course the least evil is to be preferred.

There is nothing better than bread and butter: but in all cases in the diet of children a due regard should be had to the time of life, and the constitution of the child. If the former are given in too great quantity, congestion and inflammation are frequently the result; whilst if the latter prevail in the diet, the child gets fat and loses strength, and becomes subject to diseases of debility. Neither the one nor the other kind of food can be administered by their judicious combination that the fatal effects of improper diet can be avoided.

(8) The genus Mustela of Linnæus, in the last edition of the _Systema Naturæ_, which underwent his revision, comprised the following species: _Mustela, Martes, Viverrina, Fitchius, Lutreola, Lutra, Lutreola, Bubo, Martes, Putorius, Furo, Zaluz, Erinnis, and Nivalis_. The genus thus established consisted of the Otters and Gluttons, as well as the true Weasels, and was placed between the Mustela and Ursus.

Cuvier divided the Martes (Mustela, Linn.) into the following subgenera:—

1. _Putorius, Cuv._

The animals of this subgenus are, he observes, the most mammalia of all and enough so that the canine has no internal tubercle; and their upper tuberculated tooth is longer than it is long; they have only two false molars above and three below. They may be recognized by the extremity of their muzzle, which is rather shorter and stouter than that

2. _Putorius, Cuv._
of the Martes; and they all diffuse a most disagreeable odour.

The species arranged under this subgenus are the common Polecat, Mustela sibirica, Linn.; the Polecat, Mustela euroripus, Linn.; the Polecat of Poland, Mustela sarmaatica, Pall.; the Siberian Polecat, Mustela sibirica, Pall.; the Wesel, Mustela vulgaris, Linn.; and the Boust or Ermine Wesel, Mustela erminea, Linn.

And approximated to these, he records the Mink, Norer, or Polecat of the Northern Rivers, Mustela tetracola, Pall., which frequents the banks of waters in the north and east of Europe from the icy to the Black Sea, feeds on frogs and crayfish, and has the feet a little palmated between the bases of the toes, but which its teeth and round tail approximates to the Polecat more than the Otter. It is reddish-brown, and has the circumference of the lips and under part of the jaw white. Its odour is only musky, and its fur very beautiful.

Some, Cuvier observes, think this the same as the Polecat of the North American rivers, Mustela vision, Gm., to which the name of Mink has been transferred, and which has also the feet semi-palmated; but this animal has generally while on the point of the chin only, and sometimes a narrow line under the throat, and is a different species.

Among the Polecats of warm climates, Cuvier notices the Javanese Polecat, Putorius mulepis, F. Cuv.; the African Polecat, Putorius africano, Desm.; the Striped Polecat of Madagascar, Putorius striata, Cuv.; and the Cape Polecat (the ZorilU of Buffon, Vivera zorilla, Gm.)

The Martes, or Martens, properly so called.
(Mustela, Cuv.)

These, according to Cuvier, differ from the Polecats in having an additional false molar above and below, and a small internal tubercle on their lower canine; two characters which a little diminish the cruelty of their nature.

Belonging to Europe, he notices, as very closely allied to each other, the Common Marten, Mustela martes, Linn., and Mustela foina.

As the production of Siberia, he calls attention to the Zibeline Marten, Mustela sibilina, so celebrated for its rich fur, which is brown, with some grey spots on the head, and is distinguished from the preceding by having hairs even under the toes, a provision adapted to its habitations in the most frozen mountains. The painful choice of this species is laboriously followed in the midst of winter among frightful snows, and to the pernicious with which it has been perservered in notwithstanding the meteoric terrors that surround the hunter, the discovery of the eastern countries of Siberia has been ascribed.

North America, observes Cuvier, produces many Martes, whose travellers and naturalists have indicated under the names of Pekan, Vison, Mink, &c. One of these, the White Vison of the furriers, Mustela luteocephala, Harl., has the feet as hairy and the hair nearly as soft as the Zibeline, but of a bright fulvous colour, and is almost white on the head. That, he remarks, which he shall call Pekan, Mustela canadensis, Gm., and which comes from Canada and the United States, has the head, the neck, the shoulders, and the upper part of the back minked with grey and brown; the nose, the rump, the tail, and the limbs are blackish.

The Mouffettes. (Mephitis, Cuv.)

These, like the Polecats, have two false molars above and three below; but their upper tuberculous tooth is large, and as long as it is wide, and their lower canine has two tubercles on its internal side, which approximate them to the Badgers, as the Polecats are approximated to the Grisons and the Gluttons. The Mouffettes have besides, like the Badgers, the anterior claws long, and adapted for digging, and they are even half-plantigrade; the resemblance is continued in the distribution of the colours. Cuvier truly remarks in conclusion, that in this family, remarkable for its felid odour, the Mouffettes are distinguished by a stench far exceeding that of the other species.

The Mouffettes, or Skunks, are generally striped with white upon a black ground, but the number of stripes varies in the same species. The most common is the North American species, Vivera putorius, Gm., which is black, with white stripes more or less wide and numerous, and the tip of the tail black. The odour of this suffocating animal has been compared to that of the Polecat, mingled with an overpowering stench of garlic; and nothing can be more intolerable. Cuvier also notices the Chineole

Teeth of Wesel, Zorilla, and Marten.

Upper set, a little more than twice the size of nature; lower set, nearly to the natural size.
(Pussera mephitis, Gm.), with the tail white; the stripes on the back sometimes occupy the whole of its width.

Mydas, F. Cuv.

Cuvier considers that this may be made a distinct subgenus. With the teeth, feet, and colours of the Skunks, it has a truncated muzzle in the form of a snout, and the tail is reduced to a small pencil of hair.

Only one species, Mydaus melinus, is known.

The Skunks. (Lutra, Storr.)

The Martes of Cuvier are placed between the Ratels and the Dogs.

The same position is assigned to this family by M. Lawson.

Mr. Swainson thus characterises the Mustelina, which he places between the Viverrina and the Ursina, in his family Mustelidae:—

Cutting-teeth 1-1 4-4 5-5

Canines, 2; Grinders, 5-5 or 6-6

one of which only is tubercular; head small, oval; ears short, round; body long, slender; feet short. The following are the genera which Mr. Swainson arranges under this subfamily—


Mephitis, Cuv.—Example, Pussera striata, Shaw.

Mydas, F. Cuv.—Example, Mydaus melinus.

Mydaus, F. Cuv.—Example, Lutra involuta, Storr.; L. latifrons, Cuv.; L. tridactyla, the common Otter. This genus comprises the subgenus Enhydra.—Example, Mustela latriss. The Sea Otter.

Gulo, Storr.—Example, Ursus gulo. Linn.

Eutamias, F. Cuv.—Example, Pussera mellitiera, Gm.—(Claviceps quadrupedula).—Mr. Bell, in his British Quadrupeds, makes the Mustelidae consist of the following genera:—

Lutra; Mustela; and Martes, Ray. Mr. Bell places the Mustelidae between the Ursidae and the Felidae in the same work.

Mr. J. E. Gray arranges his subfamily Mustelina, the fifth of his family Felidae, next to his subfamily Canina.

The Mustelina contain the following genera:—

Martes; Mustela; Putorius; Gymonops; Vison, Zoilla; Galera; Ratelus; Gulo; Helaeta; Mephitis; Chinchilla; Mydusus; Conusulus; Mydaus; Arctonyx; Meles; Taxidea; Lontra; Mustela; Aonyx; Piperomus; and Enhydra. (Symopsis: Brit. Mus.)

We shall confine ourselves to the Weasels properly so called, including the Martens, Skunks, and Mydas.

The dentition of the common Weasel, the Zoilla, and the Marten is very similar; and indeed M. F. Cuvier unites the three together for the sake of the slight variations that he observes, that the only difference that they present with reference to this part of their organization is that the Martens have in both jaws a rudimentary false molar more than the Weasel and the Zoilla, and that the Zoilla has the internal tubercle of the lower canine more developed than it is found in the analogous tooth of the Martens and Weasels or Polecats. In other respects their systems of dentition are quite identical.

EUROPEAN WEASELS.

(Mustela.)

Generic Character.—Body elongated, vermiciform; feet short; toes separate; claws sharp; molar teeth 5-5. Some error having obtained with regard to the species found in the British Islands, we shall select those species as examples:—

The Common Weasel, Mustela vulgaris. Specific Character.—Reddish brown above, white beneath; tail of the same colour as the body.

It has been considered as the common Weasel in the United States, is the ermine in its summer fur. Lawson notices it in his 'History of Carolina,' saying that it is the same as in England, but very scarce. Catesby also mentions it, writing 'Weasele;' and in the 'New Description of Virginia.' (1696), 'Weasels' are mentioned among their congeners, but with this saving clause, evidently written to fill a place, but these varmints driven out of my garden, or else eggs, at any time.' Dr. Richardson remarks that both the Weasel and the Ermine are indubitably inhabitants of the American continent, the Ermine extending to the most remote arctic districts, and the Weasel as far as the mouth of the Saskatchewan River. Captain Bayfield, he observes, presented the Zoological Society with specimens of the common Weasel, killed on the borders of Lake Superior, which agree in all respects with the European species; so Mr. Richardson concludes that the Stewardson, Carlton House. The last-named author adds that the Weasels of the fur countries become white in winter, like the Ermine, and are not distinguished from them by the traiders.

The Stout.'—Mr. Bell, who, in his interesting and carefully digested work on the British Quadrupeds, gives the above specific character of the common Weasel, well observes that the near approximation in figure and character, and the great general similarity in habits, which a comparison between the Stout and Wapiti presents, have occasioned considerable confusion in some of the accounts which have been given of their history, though the difference of size and colour would at once be sufficient to distinguish the species, there were no other points of disagreement between them.

'The Stott,' says Mr. Bell, 'is brown above, dirty white beneath; the tail always black at the tip, longer and more bushy than that of the Weasel, and the former animal is said to be more graceful as to its elegance and form. As against this, on the other hand, is red above, pure white beneath, the tail red and uniform. Their habits also, though generally similar, are, in many of their details, considerably distinct; and we are fully borne out at observation in saying that the account given against the Weasel of the mischief which is done to perpetrate in the farm-yard and the hen-coop, as well as amongst game of every description—on hares and rabbits, no less than on the feathered tribes—are principally due to the Stott. It is not meant to be asserted that the Stott will not, when occasion offers, attack the stock of the poultry-yard, or occasionally make free with a young rabbit or a sleeping partridge; but that its usual prey is of a much more ignoble character, is proved by daily observation.

Mice of every description, the field mouse, the water vole, rats, mice, ordinary food; and from the report of unprejudiced observers, it would appear that this pretty animal ought rather to be fostered as a destroyer of vermin, than exalted as a noxious depredator. Above all, it should not be overlooked that the Stott, ricks, opal, or farmer, is of great service in destroying the colonies of mice which infest them. These only who have witnessed the multitudinous numbers in which these little pests are found, in the various quarters of this kingdom, are specially, and better prepared, to acknowledge that the interior is sometimes drilled, as it were, in every direction by their runs, can at all appreciate the amount of their depredations; and surely the occasional abduction of a chicken or a ducking, supposing it to be even much more frequently chargeable against the Weasel than it really is, would be but a trifling set-off against the benefit, produced by the destruction of those swarms of little thieves.'

Mr. Bell adds, as ground for this defence of the Weasel, that a friend of his assured him that at least three buahes of various species of mice are destroyed daily by the clay-rick, a number that will not surprise those who have seen a good thoroughly-routing mouse-hunt in a grain rick-yard or granary where the mice have taken up their quarters in earnest. Great good the Weasel certainly does, and of a natural mode of attack. Dr. Richardson shows that small quadrupeds and birds form its staple. It inflicts a bite on the head, which pierces the brain, and seldom fails to lay the victor dead at its feet by a single blow. Not unfrequent can be seen a swarm of freshly-hatched gallinaceous and game-birds and young ducks, as well as the smaller feathered tribes; and that, although it does good service in keeping down the mice, it is a bad neighbour to the hare and rabbit-warren. Not that the Weasel will do one-third of the mischief that the Stott will, nor upon animals of such large growth, but it will do enough. It is a most active and persevering hunter; few trees will stop it when in search of birds' nests, which it robs not only by sucking the eggs, but by carrying...
off the young. It will hunt the Mole, the Field-Mouse, and other small quadrupeds in their usual haunts not only by the eye but also by the scent, like a Stoat; and amusing it is to see one of these flexible agile little creatures tracing up the scent when it is at fault. They will quarter the ground like a dog till they hit it off, and to no help from their eyes, will occasionally sit up, raising their heads, and examing their ears, and where at last will view around them. Their perseverance will tire down animals; larger and stronger than themselves; nor will water stop them when their game takes it for safety. In their plunge, and seldom quit their object till the fatal bite is inflicted. The brain of the victim is first eaten, and the body of the victim kept as a supply near the haunt of the little hunter; but it seems very questionable whether they are addicted to those blood-sucking propensities which the vulgar attribute to them; and our own experience confirms the extreme length of the head and body, and most habit to be much exaggerated, and whose own observation, as far as it had gone, tended to confirm the opinion of those who deny the existence of such a propensity altogether.

The last-named acute zoologist also throws well-grounded doubt on the assertion that the Weasel will attack and destroy snakes; and indeed he believes such a notion to be entirely erroneous. He placed a weasel and a common snake together in a large cage, in which the former had killed and eaten one of them, in the winter, with which it slept. Mutual fear was manifest, and the animals kept a distance; the snake however showing as much disposition to be the assailant as the weasel, which at first generally kept close to the ground. The sight of the weasel in the day, without however materially injuring the reptile, and evidently without any instinctive desire to feed upon it. After they had remained two or three hours together, the animals appeared almost indifferent to the presence of each other. The snake was then removed.

"How different was this Weasel's conduct," says Mr. Bell, after relating the experiment above stated, "when a mouse was introduced into the cage: it instantly issued from its little box, and in a moment single bite on the head pierced the mouse dead without a struggle or a cry. I have observed that when a Wessel seizes a small animal, at the instant that the fatal bite is inflicted, it throws its long little body over its prey, so as to secure it should the first bite fail; an accident however which I have never observed to occur when a mouse has been the victim. The power which the Weasel has of bending the head at right angles with the long and flexible, though powerful neck, gives it great advantage in this mode of seizing and killing its smaller prey.

The weasel's habit is to seize a victim and destroy it. We have all heard the story of the eagle and cat, and how the maddened quarry brought the mighty bird that had snatched it down again to the earth in the agonies of death. In the 'Magazine of Natural History,' a similar anecdote is given of a weasel and an eagle, with any strong voucher. But Mr. Bell, on the authority of Mr. Pindar, residing, when the event occurred, at Bloxworth, in Dorsetshire, relates the following passage in the life of a weasel; and as there is no ground whatever for doubt, it affords a striking instance of the murderous instinct of this little quadruped.

Mr. Pindar, while riding over his grounds, saw at a short distance from him a kite pounce on some object on the ground and immediately take it up. He then observed that the kite began to show signs of great uneasiness, rising rapidly in the air, or as quickly falling, and wheeling irregularly round, whilst it was evidently endeavouring to force some obnoxious thing from it with its feet. After a sharp bite, it made off, as if to fly from a foe. But the kite was farther from where Mr. Pindar was instantly watching the manœuvre. He instantly rode up to the spot, when a weasel ran away from the kite, apparently unhurt, leaving the bird dead, with a hole eaten through the skin under the wing, and the large blood-vessels of the part torn through.

With similar courage the Weasel will attack dogs, and even men, when its nest is invaded. This is framed of dry leaves and herbage, and is generally lodged in some snug hollow, such as the hole of a tree, a bank, or a dry ditch, which keeps it warm and comfortable. Here four or five young are brought up from each birth, and the number of these litters is two, or even three, in the year.

The female weasel is smaller than the male, and Mr. Bell well observes that it is probably the 'little reddish beast,' called by the country-people a Gane, mentioned in White's 'Selborne,' and described as not much bigger than a Field-Mouse, but much longer. Mr. Blyth informed me that the animal was known in Surrey by the name of Kine.

This species sometimes, but rarely, turns white in the winter, and in this state it is the Mustela nivalis of LINNAEUS. Mr. Bell received one from Scotland with two white spots on each side of the nose, which it retained throughout the summer.

Pennant gives the following national names for this species:—Browne of the British; La Bellette of the French; Donnola, Balistola, and Benula of the Italians; Comadreta of the Spanish; Domina of the Portuguese; Weasel of the Germans; Weezel of the Dutch; Vesel of the Swedes; and Vessel of the Danes.

The Anglo-Saxon name is Wesle.

Mr. Bell has, very properly, in his opinion, chosen to retain the generic term Mustela for the present form, in preference to Putorius, Cuvier's subgeneric name, because he considers it as the type of the family. The general form and aspect of the Weasel, he observes, show it to be typical in the group of vermine carnivora. The body is extremely slender and arched, the head small and flattened, the eyes black, and remarkably quick and lively; the ears short and rounded, the neck very long, but little shorter than the trunk, and very flexible; the tail short, not one-third the length of the head and body; smaller than that of the rest of the genus, and without the terminal tuft of long hair which exists in the Stoat; legs short and furry to the end of the toes; fur short and close. Length of head and body of male 8 inches 3 lines; of tail, 2 inches 4 lines. Head and body of female, 7 inches; tail, 2 inches.
colour in the existing fur; and he cites, in proof of this view of the subject, the case of the Hudson's Bay Lemming, which, in Captain Sir John Ross's first Polar expedition, was exposed in its summer coat on the deck to a temperature 30° below zero, and the next morning the fur on the cheeks and tip of the tail was as white as the snow. But the change was completely lost in the next winter; the animal was not seen in summer dress in the next year. Another instance of this is the Stoat, so all white. Next day the shoulders had considerably extended, and the posterior part of the body and flanks had turned to a dirty white. At the end of a week the winter change was complete, with the exception of a dark line along the shoulders, which in the spring became perfectly white. Next day the shoulders had considerably extended, and the posterior part of the body and flanks had turned to a dirty white.

Mr. Blyth, however, informed Mr. Bell that he had come to a different conclusion, and was of opinion that authors who have observed the marks on each shoulder for had been in a manner changed in autumn; for in a specimen which Mr. Blyth had lately examined, and which had been killed during the autumnal change, it was clearly perceivable that the white hairs were all new, and not the brown changed in colour. Mr. MacGillivray, too, a close observer, says that the change is not effected by an alternation in the colour of the same hairs, but by the gradual subdivision of brown for white hairs.

He states that a male killed on the 30th March had on the breasts and sides a broad band of brown and white; and the tail, a broad band of brown, interspersed with white hairs; and the brown hairs were all much shorter than the white. A female killed on the same day in company with the male had the upper parts all brownish-red, but paler than those of the male; and the white hairs, interspersed; but its fur was not shorter than that of an individual killed in December. In the former case, Mr. MacGillivray observes, the summer change had commenced, and the winter coat not yet adopted; in the latter case, the winter coat had not assumed a white colour, and still remained. He states that a female shot at Loanhead, near Edinburgh, in the end of February, 1832, was brown above, with a few white hairs, especially at the ends of the tails. The body was covered with mild winter, and the animal had not assumed its white winter fur, for the red hairs did not seem to be new. 'On the whole,' says Mr. MacGillivray in continuation, 'it appears to me that in spring and the beginning of summer, when the sun is at its highest, the white hairs are produced, and that all the red hairs that appear are new. Towards December, earlier if the weather be very cold, later if less so, the hairs of the upper parts become white. In an individual obtained in December, 1834, the colour was a mixture of white and brownish-red. The hairs of the latter colour were not in the lowest degree faded, and those of the former were much shorter, and evidently just shooting; so that the change from brown to white would seem to take place by the growth of new hairs, and not by the shortening of those of the summer dress. But in mild winters the hairs retain their red colour; and if new hairs come in, they are also red: if the weather become colder, the new hairs that appear are white, although the old hairs do not vary; and if there are alternations of severe cold and temperate weather, the animal becomes mottled. It is certain that the change of season is not regularly attended with a change of colour; that great cold at any period of winter, if protracted, is accompanied with a change of white, but there is no evidence that a return of heat produces a return of the red colour in white hairs. The hairs continue to elongate from the end of spring to the beginning of winter, and the fur is certainly not longer in winter than in spring. Perhaps the same may be said of the autumn; but the animals grow in mild weather are brown, while those that shoot out in cold weather are red, cold having the effect of changing the structure of growing hairs, or of acting on their bulbs so as to prevent the application of colouring matter.

We have given this detailed account in Mr. MacGillivray's own words, and of the accuracy of it there can be no doubt. Still the experiment made on the Hudson's Bay Lemming change was only empirical, and it was impossible to prevent the possibility of attributing it to anything but a change of the hair actually in existence, seems conclusive in favour of Mr. Bell's opinion, in some cases at least. Indeed Mr. MacGillivray himself admits, in the same account of the same part of the country, that something new on the brown hairs themselves, on the application of intense cold, become whitened; and he states that he has seen individuals of a brown colour patched with white, in which the white hairs were of the same length as the brown; but he adds that he had never met with any of which the hairs were partially coloured, or appeared to be changing from brown to white, still less from white to brown; and he concludes 'that the change from this animal sheds the fur gradually, and in small parcels or patches, all the year round, in the same manner as partridges shed their feathers, and that so long as the weather is mild, the growing hairs are brown, on the one hand, but while with it is very cold. That in March, 1834, I was presented by Mr. Ferguson, of Raith, with a most beautiful specimen, on which there was not a single red hair. As to the change effected in coloured hair by intense cold, a separate experiment we are to believe concerning it, and as yet ermines have not been subjected to this kind of observation.'

That change of temperature, and not merely change of season, is necessary to affect the alteration of colour, is evident from Mr. Hogg's observations, which will be found partly in the 5th vol. of Loudon's 'Magazine of Nat. Hist.' and partly in the work above quoted of Mr. Bell, who received a letter from Mr. Hogg on the subject after the publication of the 'History of the British Quadrupeds.'

Mr. Hogg, whose remarks appear to have been made in the county of Durham, states that within the last nine years from the date of his communication he had met with two Ermines alive, and in the most different winters that have occurred, in a gross of Ermines which he kept in the extremely severe winter (January to March) of 1823: the other in the extremely mild January of 1832.

In consequence of the months of December, 1831, and January, 1832, and 1833, were so nearly, and so long, that the nearly equally, there was no snow; and he says Mr. Hogg, 'greatly surprised to find this stoat clothed in his winter fur; and the more so, because I had seen, about three weeks or a month before, a stoat in its summer cost or brown fur. I was therefore naturally led to consider whether the reappearance of the winter coat, and the brown and white stoats seen by me this warm winter inhabited, could alone account for the difference of the colour of their fur, in any clear and satisfactory manner. The situation then where the stoat was seen, is in lat. 54° 29' N. nearly, and long. 1° 33' W. It is an island at a very considerable elevation, and in the immediate neighbourhood of the loamy moorlands called the Hambledon Hills. These constitute the south-western range of the Pennines, and are situated about 1200 feet above the sea. At the time, the Ermine was making his way towards the hills, where, no doubt, he lived, or frequently haunted; and consequently the great coldness of the atmosphere, even in so mild a winter, upon so elevated and bleak a spot as that moorland, would satisfactorily account for the appearance of the animal in its white fur; although the place is, in a direct line, more than twenty-three miles distant to the south of the fields near the Tees, inhabited by the Brown Stoat.' The Ermine inhabits the treetops of the head and body is nine inches ten lines, the tail being four inches eight lines, is the Carunc of the antient British; Stoat, Stoat, and Greater Weasel of the modern British; L'Hermine of Le Rouge de l'Armorial. In the Spanish: Amino and Armelina of the Spanish; Hermelin of the Germans; Hermelin and Lokati of the Swedes; Hermindly of the Dutch; Hernalin and Lokat of the Danes; Heremone and Shacoahew of the Cree Indians; and Terreya of the Esmaraux.

Geographical Distribution.—Temperate Europe generally, but common only in the north. The finest, that is, those with the longest and thickest fur, and of the purest and brightest colour, are imported from the high latitudes. Russia, Norway, Siberia, Lapland, and various other parts of northern Europe. From the Canada imports in the year of 1833, 506,348. In America it is found from the most northern limits to the middle districts of the United States. Ermine-skins are also found in various parts of Europe, but not so common as in Canada; and there is a voice; but they have so sunk in value, that they are said not to repay the Hudson's Bay Company the expense of
collecting them, and very few are brought to this country from that quarter.

*Hodie,* &c.—It appears that in England generally, says Mr. Macgillivray, *the Ermine is less common than the Wessel; but in Scotland, even to the south of the Frith of Forth, it is certainly of more frequent occurrence than that species; and for one Wessel I have seen at least five or six Ermines. It frequents stony places and thickets, among which it finds a secure retreat, as its agility enables it to outstrip even a dog in a short race, and the slimmess of its body allows it to enter a very small crevice. Patches of hare, in particular, afford it perfect security, and it sometimes takes possession of a rabbit's burrow. It preys on game and other birds, from the grouse and ptarmigan downwards, sometimes attacks poultry or seeks its eggs, and is a determined enemy to mice. Young rabbits and hares frequently become victims to its rapidity, and even full-grown individuals are sometimes destroyed by it. Although in general it does not appear to hunt by scent, yet it has been seen to trace its prey like a dog, following its track with certainty. Its motions are elegant, and its appearance extremely animated. It moves by leaping or bounding, and is capable of running with great speed, although it seldom trusts itself beyond the immediate vicinity of cover. Under the excitement of pursuit however its courage is exerted to the greatest advantage by the thought of death beguiled to a grouse, hare, or other animal strong enough to carry it off, and it does not hesitate on occasion to betake itself to the water. Sometimes when met with in a thicket or stoney place, it will stand and gaze upon the intruder, as if conscious of its own superiority, and although its boldness or exaggerated in the popular stories which have made their way into books of natural history, it cannot be denied that, in proportion to its size, it is at least as courageous as the tiger or the lion. 

Mr. Bell was informed by the Rev. F. W. Hope that the latter, while shooting in Shropshire, was attracted by the loud shrill scream of a hare which he thought had been just caught in a poacher's snare. He ran towards the spot, and there saw a hare limping off, apparently in great distress, with something attached to the throat of a stoat. This proved to be a stoat, and the stamch hare made its way into the brushwood with its enemy still holding on. In England it takes advantage of the galleries of the mole for its winter retreat, as well as the rabbit-burrow.

Captain Lyon, R.N., saw the Ermine hunting the footsteps of mice in the north as a hooded hunt a fox, and observed their burrows in the snow, which were placed up in as large a circle as those of the common polecat in Britain. These passages ran in a serpentine direction, and near the hole or dwelling-place the circles were multiplied as if to render the approach more intricate.

The same graphic voyager gives a lively description of an Ermine in the open field. As a stoat, the moment he obtained daylight in his new dwelling, he flew at the bars, and shook them with the greatest fury, uttering a very shrill passionate cry, and emitting the strong musky smell which I formerly noticed. No threats or terrors could induce him to retire to the sleeping-place, and whenever he did so of his own accord, the slightest rubbing on the bars was sufficient to bring him out to the attack of his tormentors. He soon took food from the hand, but not until he had first used every effort to make the food conveyed to him. This boldness gave me great hopes of being able to keep my little captive alive through the winter, but he was killed by an accident.

Dr. Richardson states that the Ermine is a bold animal, and even domesticates itself in the habitations of the fur traders, where it may be heard the live-long night pursing the white-footed mouse (*Mus leucopus*). He remarks that, according to Indian report, this species brings forth ten or twelve young at a time. In this country it produces about five in April or May.

*Chuze.*—In Siberia Ermines are taken in traps baited with flesh; and in Norway they are either shot with blunt arrows, or taken in traps made of two flat stones, one being propped up with a stick, to which is fastened a length of string. This the animal nibbles when the stone falls and crushes it. Two logs of wood are used for the same purpose and in the same manner in Lapland.

P. C. No. 1700.

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*Ermine in summer dress.*

*The Polecat, or Petchet Wessel, Mustela putorius.*

Description.—Slutter in proportion than either the common Wessel or the Ermine, and the head broader. Nose rather pointed, ears round and not conspicuous. Neck comparatively short. Tail inclining to bushy, rather more than a third of the length of the body and head.

There are two kinds of fur in this species; the short is fulvous and woolly, the long is black, brownish black, and shining. A brown colour mingled with yellow, varying according to the proportions of these two sorts of fur in the individual, is the result. There are some white marks about the mouth and ears, and the parts which are darkest in colour are the head, tail, and feet. Length of the head and body 1 foot, 5 inches, 6 inches; of the tail, 5 inches 5 lines. Such is Mr. Bell's measurement. Mr. Macgillivray makes the total length to the end of the tail 17 inches, and observes that the anal sac is usually represented as single; but he found that beneath the extremity of the rectum externally two sacs containing a yellowish fetid substance of the consistence of thick cream were present.

This is the *Ejefjeldi* of the ancient Britsh; *Falumar,* *Fomart* (as well as the terms given at the head of the description) of the modern British. *Polecot* has been supposed to have been a corruption of Polish Cat; but this seems to be not much better than a guess; *Pomarti* and *Falimar* have with better reason been considered to be contractions of *Poult Martin,* in contradistinction to the *Street Martin.* It is the *Putois* of the French, *Forta* and *Puzolo* of the Italians, *Putoro* of the Spanish; *Ilte, uh,* and *Dunning* of the Germans; *Houling* of the Dutch; *Ille* of the Swedes, and *Ilder* of the Danes.

Geographical Distribution.—Europe generally. Pen- nant says that it is common in the temperate parts of Russia, but grows scarcer in Siberia, except in the desert of Baraba and beyond the lake Balakat.

*Habits, &c.*—The Polecat is most destructive to the poultry-yard and the preserve; its appetite for slaughter, which seems never to be satisfied as long as any living thing remains within its reach, rendering it a most ruinous neighbour to those who rear fowls or keep up a head of game. Not only the young birds fall victims to it, but the parents also; nor are even geese or turkeys safe. We remember an instance of a hen and a whole brood of

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chickens being killed by one of these destroyers in a single night; and upon another occasion, seven or eight nearly full-grown turkeys. The brain and the blood seem to be the choicest portions. The bodies of the dead are carried off to its haunts, which are generally in some cope or wooded part a snug or in the heart of a preserve, whence it issues on its deadly errand in the evening, generally soon after sunset, or when it grows dusk. It is bold and daring withal. Mr. Nevill Wood, ofoston Hall, in Derbyshire, informed Mr. Bell that some years ago he had ten fine young ducks, which were shot up every night in a small outhouse, destroyed in one night by a polecat. On entering the place in the morning, Mr. Wood found every duck lying dead, each with a hole in the neck; and in a few moments the perpetrator of the bloody deed marched towards him, licking its jaws without exhibiting the slightest alarm.

No 'vermin' is placed with more satisfaction upon 'The Keeper's Tree,' for none commits more havoc, if so much, among the game. Beginning with the egg, it persecutes all the game-birds through every period of life, and is a far more determined enemy than the Stoat itself to the hare and rabbit-warren. The fox, as is well known, will do much to keep down the phasians, and especially the rabbits and hares; but even this wily and powerful invader is not so mischievous as the species of which we are treating. Where a fox will kill one, a polecat will immolate ten, to say nothing of egges; no vertebrated animal seems to come amiss to its murderous nature. Bewick relates that in the spring its nest was found in the snow from the side of a rivulet to its hole at some distance from it. As it was observed to have made frequent trips, and as other marks were to be seen in the snow which could not easily be accounted for, it was thought a matter worthy of great attention. It after the accounts examined, and five fine eels were discovered to be the fruit of its nocturnal excursions. The marks in the snow were made by the motion of the eels in the quadraped's mouth. In Loudon's 'Magazine' (vol. vi.) is an account of a female polecat that was hunted to her nest, which held five young ones in a comfortable bed of withered grass. From a side hole the narrator picked out forty large frogs and two toads alive, but capable of sprawling only, for the old polecat had stricken them all with palsy by a bite through the brain of each.

The nest of this species is generally made in some rabbit-burrow, in the crevice of a rock, or where the tangle hedgerow and brushwood overgrow loose heaps of stones, and there the female drops from four to six young in May or early in June. The courage of the Polecat is great, and none of the tribe denominated by gamekeepers 'vermin' so severely tries the 'pluck' of a terrier; for its flexibility, unless seized in the right place and shaken to death at once, enables it to turn and fasting upon the nose of the dog, so as to make the latter not unfrequently desist from the attack.

The Polecat.

Pennant remarks that warrens assert that the Fitchet or Polecat will breed with the Ferret, and that they are sometimes obliged to procure an intercourse between these animals to improve the breed of the latter, which by long confinement will abate its savage nature, and become less eagar after rabbits, and consequently less useful. "Mr. de Buffon," says Pennant, in continuation, "denies that it will admit the Fitchet, yet gives the figure of a variety under the name of the Polecat (La Preure Polecat), which has much the appearance of being a spurious offspring. To put the matter out of dispute, the following fact need only be related. The Rev. Mr. Lewis, vicar of Llan-owel, in Caermarthenshire, had a tame female Ferret, which was permitted to go about the house; at length it absented itself for several days, and on its return proved with young; it produced nine of a deep brown colour, more resembling the Fitchet than the Ferret. What makes the matter more certain is, that Lewis had no males of this species for it to couple with, neither wild nor domestic, 

inferior to the fur of the Sable or Marten, that of the Polecat is nevertheless esteemed, and a considerable import of it is made to this country from the north of Europe, under the name of Fitchet.

Genus Martes (Ray).

Generic Character.—Grinding teeth 5-5; 6-6.

Some indeed read 'mele' for 'marte,' and so make a badge of the capture. The amatorius in the Delphin (vol. i.) has been added as much to his illustration of that reading, for he writes, 'Legit allia capita mele, Gallicum alaibere, chat savauge, fouine.'—badger, wild cat, marten, for which last 'fouine' is the French term.

George Bauer, who wrote under the name of Agriculturist in his book De Animalibus Subterraneis, notices the three kinds of marten first above alluded to. After writing a clear account of the Polecat, he says: 'A third kind of sylvan species lives in the caverns of rocks and caverns, which is called Martes by Martin and Martes der Germans.' He then gives Martin's line above quoted, and proceeds to describe the animal and its habits with much accuracy. This is the Common or Stone Marten. He then describes the Polecats (the Polecat and Fitchet) as being the fifth, 'called by the Germans Zobel,' the Sable. The skins of the last are, he remarks, more precious than cloth of gold, and he adds that forty of the best, the usual number in one bundle, have been sold for more than a thousand pounds of the (Folio, 1743).

Geneser, Aldrovandus, and Joneston did little more than copy Agriculturist. 'They seem however,' says Mr. Bennett, who has well traced up the opinions of authors upon this subject, 'to have abandoned Agriculturist's subdivision of the second species and to have described the Polecat under the name of Marten, as it was emphatically denominated by the Germans, as the Beech Marten, imprinting to it a more familiar and sociable disposition, and a fondness for the neighbourhood of inhabited places. The same distinctions are adopted by Ray in his Synopsis Generum 1683; but to his description of the Sable he adds that Dr. Tanner Robinson had seen the animal itself in the possession of Dr. Charlton. Its size was that of a cat of Cyprus. Its colour darkly tawny; the fore part of its head and its ears of a whitish ash-colour; and the tufts on its eyebrows, nose, and face very long.'

Mr. Bennett remarks in continuation that so lightly did Linnaeus estimate the value of the distinctions indicated between the Pine and Beech Martens, he has uniformly treated them as one and the same animal in all his subsequent writings, from the first edition of his Systema Naturae to the twelfth of his Species Naturae. It is only, he observes, in the last, that Linnaeus for the first time intimates the existence of any difference between them. There he
speaks of two varieties as known to the rustics—the Beech Marten with a white throat, and the Pine Marten with a yellow throat. The Linnaean character of the Sable is principally, Mr. Bennett adds, founded on that of Ray, and is accompanied by the sign used by Linnaeus to denote that he had not seen the animal to which it is appended.

Klein (1751) keeps the old descriptions of the three species. Brisson (1760) distinguishes the Beech and Pine Martens, and expresses himself about the colour of their throats; but he describes the Sable, which he had not seen, from Ray and the more antient writers.

Daubenton evidently doubted whether to consider the Beech and Pine Martens as distinct species or varieties only, observing that the one resembles the other so closely, that the colours of the fur form the sole distinction. He describes the Pine Marten as having the throat yellow, and the Beech Marten as being white in that part. The difference of the species, he says, "is the same as that which Bennett had observed the same fact. And lastly, even the comparative length of the tail, on which the greatest stress is laid, affords no absolute criterion; for Pallas himself, Mr. Bennett remarks, states that this organ is a little longer in the males, at least when young, than in the females; must however," says Mr. Bennett, in concluding this part of his careful treatise, "be allowed to outweigh all such considerations; and to indicate the existence of a true sable, as a distinct species from the martens, although unknown to later zoologists.

The name of Pallas undoubtedly carries great weight with it, and justly, but still cases of this description ought not to be argued too much on authority.

But to return to the opinions of authors: M. Lesson encompasses all the martens under the epithet of the *Marte commune*, *Mustela marces*, *Linn.*; *La Marte, Buff.* 2. *Marte Fontine, Mustela fonta*, *Linn.* (Gmel.?), *La Fontine, Buff.* 3. *Marte zibeline, Mustela zibellina*, *Linn.*, the *Sobol of the Poles and Russians*; the *Sable of the Swedes*. The latter three species have been almost universally enumerated by authors, each copying his predecessors with more or less correctness. Desmarest, he remarks, has omitted the most important characters given by Pallas for the Sable, and has, on his own authority, furnished it with a tail of two-thirds the length of its body, while that of the Pine and Beech Marten is stated to measure but little more than the half; and he says that he knows of but one instance, since Linnaeus, in which the fore-legs and the tail may have been perfectly conjoin'd. This occurs in Dr. Walker's "Essay on the Scottish Mammalia." Dr. Walker indeed, Mr. Bennett observes, does not mention the former, and possibly may not have regarded it as a native of Scotland: he characterizes the fore-legs and the tail in the same manner, and observes that as the animal advances in age the throat becomes yellower.

Mr. Bennett, in the Gardens and Menagerie of the Zoological Society, where the above inquiry is carried out, found the Sables, *Pine Marten, Mustela marces*, under the Appendix, *Mustela fonta*, under the name of *Mustela*, and the *Marte zibeline*, *Mustela zibellina*, *Linn.*, two individuals which were sent from Russia to the late Marchioness of Londonderry, as specimens of the true sable, from which, as described by Pallas, they were at once distinguished by a well-defined yellow patch, spreading from their chest and throat, and by the length of their tail, which considerably exceeded that of their hinder legs. "Their colour," says Mr. Bennett, "during the winter was, with the exception of the throat and the margins of the ears (which were likewise yellow), of the colour of the winter sable, with their hair extremely long and fine. The fore-legs of one of them were crossed in front towards the upper part by a yellowish stripe. In the summer they assumed a much lighter tinge, and their hair became so much shorter as to make the existence of being scarcely more than half their former bulk. The extremities of their toes, which had been well protected by lengthened wool throughout the cold weather, were also stripped of their covering, and their skin generally. In manner they were lively, active, and good-humoured; they slept much during the day, but frequently indulged in whirling themselves, half climbing and half leaping, round the inside of their cage, with such rapidity as almost to elude the eye." Mr. Bennett goes on to state that the museum in Bruton Street contained five more specimens of the group.

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besides those which obviously belonged to species distinct from the animals under consideration. Two of these might, in his opinion, be fairly referred to the Beech Marten in its winter and summer dress; but both were approach to the Pine Marten even in this supposed distinguishing character, which is far from offering any help towards a satisfactory solution of the difficulty.

Mr. Macgillivray notices these observations of Mr. Bell in the Zoologist's Library (British Quadrupeds); and then states that the examination of individuals in different stages, and obtained in various parts of Scotland, had disclosed to him a gradation of colouring combined with a sameness of form that had satisfied him as to the individuality of the species. In fact, says Mr. Macgillivray, the “beech marten” and the “pine marten” differ less from each other as to size than individuals of the polecat, ermine, or weasel, and the differences of colour observed are not greater than in the common fox. The former, var. with the white throat, Linn.; Mustela foina, Gmel.; Martes furorum, Ray.; Martes saxonum, Klein. Mr. Bell describes the head of this marten as somewhat triangular; the muzzle pointed; the nose extending a little beyond the lips; the ears large and tending to be lower in the males than in the females; the tail large, open, and rounded; the body much elongated and very flexible; the tail long, thick, and somewhat bushy; the feet rather short; the toes generally naked, but at times, probably in the winter, covered beneath with a thin soft hair. The fur, he observes, is of two sorts: the inner extremely soft, short, copious, and of a light yellowish grey colour; the outer very long, shining ash-coloured at the roots, brown at the extremity, but of a yellow tinge at the lower part of the body; the middle of the back, the tail, the outer parts of the legs and the feet being darker than the other parts; the belly lighter and more grey; the throat white, but Mr. Bell states that in one instance he had seen it of a dull yellow tinge. Inset: A specimen of the pine marten with a length of head and body 1 foot 6 inches; of the tail 9 inches 6 lines.

This is the Bela grays of the ancient British, and Stone Marten of the moderns. It is La Fouine of the French; Poma and Puma of the Maltese; Martes and Golfinis of the Spanish; Hausser Marder and Stein Marder of the Germans; Marter of the Dutch; Mard of the Swedes; and Maas of the Danes.

Geographical Distribution.—Northern and Temperate Europe. Western Asia.
woods, though it is often met with in them, and more frequently in mountainous and stony places, and nearer the habitations of man, than the Pine Marten. It prefers the vicinity of farm-yards and homesteads, and is a ruinous visitor to them and the game-preserve. It is an expert climber, and Daniel, in his Rural Sports, has figured it on a tree about to attack a hen pleasantly at perch. A very generous rod has been added to this was the Pine Marten in a state of domestication. It is lively, active, and graceful in its movements. The nest of the female is constructed of herbage, straw, or grass, sometimes in the hollow of a tree, sometimes in the crevices of rocks, not unfrequently in a ruin, and occasionally in granaries or barns.

The fur of the Beech Marten is considered very far inferior to that of the Pine Marten, and is known in the trade as the skin of the Stone Marten. Many are imported from the north of Europe, and do not represent Sable. The comparatively poor quality of the fur however is immediately perceptible to the experienced eye, although, as is the case with most of the animals which are used for their fur, the northern skins are fuller, richer in colour, and more lustrous than those from more temperate climates.

The Pine Marten.—Martes obesus, Ray; Mustela martens, Linn. Brown; throat yellow; toes naked beneath; legs longer and limb smaller than in the Beech Marten.

Habits, &c.—The Pine Marten in its habits resembles the Beech Marten, but it shuns the neighbourhood of man—living in Europe in deep forests, and preying on birds and the smaller animals. The female deposits two or three young ones in a nest of moss and leaves formed in some hollow tree, when she does not take possession of that of the squirrel or the woodpecker.

Dr. Richardson states that the Pine Marten inhabits the woody districts in the northern parts of America, from the Atlantic to the Pacific, in great numbers, and that it has been observed hunting both in the depth of winter and when the trees have been killed by fire, but are still standing. ‘It is very rare,’ continues Dr. Richardson, ‘as Hearne has remarked, in the district lying north of Churchill River, and east of Great Slave Lake, known by the name of Chippewa or Barrier Lands. A similar district, on the Asiatic side of Behring’s Straits, twenty-five degrees of latitude in breadth, and inhabited by the Tchntski, is described by Pennant as equally unfrquented by the Marten, and for the same reason, the want of its finest fur, is more scattered on the sides of the mountains in America like that of woods, about the sixty-eighth degree of latitude, and it is said to be found as far south as New-England. Particular races of Martens, distinguished by the fineness and dark colours of their fur, appear to inhabit certain rocky districts. The rocky and mountainous, but woody district of the Nipigon, on the north side of Lake Superior, has long been noted for its black and valuable marten-skins.’

The same author gives the length of the head and body as from eighteen to twenty inches, and notices a remark of the natives that the fur loses all its lustre, and, consequently, much of its value, upon the falling of the first shower of rain for four or five weeks. He further states that this animal preyed and was an importunate and inconstant visitor to small libraries. A partridge’s head, with the feathers, is said to be the best bait for the log-traps in which it is taken. It does not reject carrion, and often destroys the hoards of meat and fish laid up by the natives, when they have accidentally left a crevice by which it can enter. When its retreat is cut off, it shews its teeth, sets up its hair,arches its back, and hisses like a cat. It will seize a dog by the nose and bite so hard, that unless the latter is well used to the combat, it escapes. Easily tamed, it soon becomes a master, but is not docile. The flesh is occasionally eaten but not prized by the Indians. The females are smaller than the males, go with young about six weeks, and produce from four to seven at a time about the end of April. According to Mr. Graham, this marten is sometimes troubled with epilepsy.

The importation of Pine Marten skins from Hudson’s Bay and Canada is great. Pennant relates that at one of the Company’s sales (in 1743) not fewer than 12,370 good skins, and 2360 damaged, were sold, and about the same time the French brought into the port of Rochelle from Canada no less than 30,955. Dr. Richardson states that upwards of one hundred thousand skins have long been collected annually in the fur countries.

The editor of the last edition of Pennant’s ‘British Zoology’ says that the length of a male which he saw in Suffork was nineteen inches, exclusive of the tail, which measured ten inches; the total length of the female the same, but the tail longer in proportion to the body. The breast of the latter was of a paler yellow, and the colour extended behind the ears.

Mr. Bell, after remarking that the colour of the fur is scarcely a tangible distinction, observes that different individuals of the Beech Marten vary quite as much in this respect as the Pine Marten and the Sable: the existence of fur on the toes, which has been introduced as a character of the Sable, probably depends, he observes, on climate; and is mentioned by Pennant as having been seen by him in the common Marten. ‘Never,’ says Mr. Bell, ‘having seen an undoubted whole specimen of the true Sable, I am unable to assert any of the differences given to our knowledge on the more important characters of the two animals; but I have found in the examination of numbers of the finest sable-skins, that the yellow patch on the throat had always an irregular outline, and that there were also small spots of the same kind scattered on the sides of the neck. This is a distribution of the colour which I have never observed on the common or Pine Marten. I offer the fact however, merely as one which, combined with other characters, may possibly aid in determining the question when we have fuller information on the subject.’

The probability seems to be that the Beech Marten, the Pine Marten, and the Sable do not offer sufficient differing characters to warrant their specific distinction.

The Pine Marten.

Asiatic Weasel.

Genus, Mydsus.

We select this form as an example of the Asiatic Mustelidae.

Generic Character.—Five toes on each foot, united up to the last phalanx by a very narrow membrane; claws proper for digging very large on the fore-feet, moderate on the hind-feet; tail rudimentary; pupill round; no external ear; four pectoral and two jugular mamme.

Dental formula:—Incisors, 6-6-6; canines, 1-1-1; false molars, 2-2; 3-3; flesh-cutting molars, 1-1; tubercular molars, 1-1; 1-1 = 34.

Example, Mydsus meliceps.
This is the *Teledu* of the Javanese east of Cheribon; *Seng-gong* of the Sundanese of the mountains districts from Cheribon to Bantam; *Mephitidae* of the inhabitants of Sumatra; *Mephitidae javanensis* of Bantam.

**Geographical Distribution.**—Dr. Horsfield states that this species presents a singular fact in its geographical disposition. It is, he says, exclusively confined to those mountains, which have an altitude more than 7000 feet above the level of the ocean, and on these it occurs with the same regularity as many plants. *The long-extended surface of Java,* continues Dr. Horsfield, *abounding with conical points which exceed this elevation, affords many places favourable for its resort. On ascending these mountains the traveller scarcely fails to meet with our animal, which, from its peculiarities, is universally known to the inhabitants of these elevated tracts; while those of the plains it is as strange as an animal to the country. In my visits to the mountainous districts I uniformly met with it, and, as far as the information of the natives can be relied on, it is found on all the mountains. It is, however, more abundant on those which, after reaching a certain elevation, consist of numerous connected horizontal ridges, than on those which terminate in a defined conical peak. Of the former description are the mountains Prahu and the Tengger hills, which are both distinctly indicated in Sir Stamford Raffles's map of Java: here I observed it in great abundance. It was less common on the mountain Gedê, south of Batavia; on the mountain Ungaran, south of Semarang; and on the mountain Ijen, at the farthest eastern extremity, but I traced its range through the whole island.*

**Teledu,**—Most of the species and ridges are cultivated for the production of wheat and European vegetables, and fruits, such as potatoes, cabbages, peaches, and strawberries in a deep vegetable mould, where the Teledus range, and in its search for food injures the plants and destroys the roots. It turns up the earth with its nose like a hog, and thus leaves vexatious traces of its nocturnal visits.

The dwelling of the animal is formed at a slight depth beneath the soil, under the roots of a large tree where it constructs a globular chamber in different soil, smooth and regular; and there is a subterranean approach to it about six feet long, the external entrance to which the animal conceals with twigs and dry leaves. Here it remains hidden during the day, and at night comes forth to seek the insects and their larvae, and common earth-worms, which are its food. They are said to live in pairs, and the female produces two or three young at a birth, according to the natives.

The felid matter, which is viscid, and which Dr. Horsfield was assured the animal could not propel beyond a distance of two feet, is very volatile, and consequently spreads to a great extent. The entire neighbourhood of a village is sometimes infected by the odour of an irritated Teledu; and it is so powerful in the immediate vicinity of the discharge as to produce syncope in some persons.

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**Description.**—Agreed in size generally with the polecats of Europe and America. Eyes placed high in the head, resembling those of a hog, which animal is called to mind by the appearance of this species; eyelids rigid, well provided with minutely-bristled eyebrows; irides dark, pupil circular; ears nearly concealed by hair, but provided externally with an oblong conch surrounding the posterior part, and passing the lower extremity of the meatus auditorius, forming a small curve inward; no perceptible whiskers, a few long straggling hairs on the upper lip.

Fur composed of long, delicate, closely-arranged hairs, silky at the base, and forming a warm coat. Colour blackish-brown, more or less intense on every part of the body, except the crown of the head, a streak along the back, and the extremity of the tail, which are white, with a slight tinge of yellow, but in some individuals the streak is interrupted. The brown colour is generally lighter on the abdomen, and is subject to variations generally from greyish-brown to deep brown with a sooty tint; the last the most common. Tail scarcely half an inch long, the hairs projecting above an inch from the body. Limbs short and stout; feet plantigrade. Claws united at the base by a thick membrane enveloping this part as a sheath; those of the fore-feet nearly double the size of the hind-feet. Two glands of an oblong form, about an inch long and half an inch wide, near the extremity of the rectum, furnished with an excretory duct nearly half an inch long, which communicates with the intestine. Fluid secreted by the glands perfectly analogous in odour to that secreted by several species of *Mephitidae* in America, particularly that of *Mephitidae striata,* Fitch. Length of body and head, from extremity of nose to root of tail, one foot two inches and three quarters; of naked tail, half an inch; of tail, with hairy covering, two inches. (Horsf.)

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**Teledu.** (Horsf.)

Dr. Horsfield describes the manners of this species as by no means ferocious, and states that, if taken young, it might, like the badger, be easily tamed. He kept one some time in confinement; it became gentle, and never
emitted its offensive smell. Dr. Horsfield carried it with him from Mount Prahu to Bleden, a village on the declivity of that hill, where the temperature was more moderate. It was tied to a small stake with which a string was being made, and moved about quietly, burrowing the ground with its snout and feet, as if searching for food, without the bystanders or making violent efforts to disengage itself. It ate voraciously of earth-worms (leumites) which were brought to it, and held one extremity of a worm in its claws while its teeth were employed in tearing the other. After it had eaten ten or twelve, it became drowsy, made a small groove in the earth, in which it placed its snout, and, having deliberately composed itself, soon slept soundly. (Zoological Researches in Java.)

African Weasels.

We select as an example, the Ferret, Mustela furo, Linnaeus; Viscera furo, Shaw.

Description.—Yellowish, different parts being more or less white, for the long fur is partly white and the short almost entirely yellow. Eyes pink. Length of head and body, fourteen inches; of the tail, five inches six lines.

This is Le Furet of the French.

Geographical Distribution.—Africa: domesticated in Europe.

The Ferret was well known to the ancients, and it appears that it was used by them much in the same manner as it is employed in the present day. Its use in Spain is noticed by Strabo, (III, p. 144, ed. Casaubon) and Pliny (Nat. Hist., viii, 56) speaks of its services, under the name of Viscera, in hunting rabbits by entering their burrows and lacerating them, so that they were taken when they bolted out.

Habits, &c.—Similar to those of the European Weasels, but more bloodthirsty. Capable of a certain degree of tameness, it seldom, if ever, becomes attached, and is a dangerous inmate unless properly secured. It has even been known to attack and cruelly lacerate an infant which had been left unguarded in its cradle, and with such ferocity that, after it had been driven away, the cries of the terrified child brought it from its hiding-place, eager to renew the attack.

This species, whose whiteness and red eyes may probably be the result of a long period of domestication, cannot bear cold, and should be kept warm to ensure its health, and condition. It is said to breed twice a year in a state of domestication, unless it devours its offspring, which it sometimes does, and then it has three litters. The gestation of the female continues six weeks, and she then produces generally six or seven young, sometimes nine. These are blind for a month, and at the end of two more are considered fit for service.

Ferrets should be kept in tubs or small boxes, and cleanliness is very essential to their health and strength. To enter them, they should, when the rabbits are half grown, be sent into the burrow with a line tied round them, and unmuzzled. When the ferret seizes a rabbit, the line should be gently pulled and the ferret drawn back, holding the rabbit in its mouth. This mode can only be practised where the burrows run comparatively straight and the tunnels narrow.

Ferrets should be fed before they are taken to the warrens, as they are filled with food they will not hunt, but burrows for hours. Before they are turned, they should be muzzled or coped, that being no name for human practices of sewing up ferrets.

The ferret is recommended as the best method of catching a piece of soft string round the neck; one piece round the head, and leave one piece over, piece round the under jaw, pass it under the teeth then round over the upper jaw, and there tie it, leaving the ends long. The mouth will thus be kept closed. Then bring the four ends together, and tie them in one knot on the top of the head; this makes all safe. No pain is inflicted apparently by this operation, for the ferret thus coped hunts as eagerly as if it were unmuzzled.

Daniel, in his Rural Sports, thus describes the method of catching. "The ferret is coped or muzzled, and a small bell tied round its neck; and after the holes are as silently as possible covered with purse-nets, called Plans, the ferret should be put in the windward side of the burrows, where the person should also place himself, and observe the utmost silence, otherwise the rabbits will retreat to their lower earths and be scratched to death before they will bolt. Hay nets are however chiefly used by experienced warrers, who are both to turn ferrets into burrows, which invariably give the rabbits a dislike to them. The mode of using these hay nets is then described.

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AMERICAN WEASELS.

Genus Mephitis.

Generic Character.—Body elongated, arched; toes separated and armed with long claws, the anterior proper for burrowing. Tail long and very bushy, or entirely null. Anal glands secreting a foul odour.

Dental formula:—Incisors, 6; canines, 1;—1; molars, 1; 3-3. 5-3 = 32.

M. F. Cuvier gives the above cut as the dentition of Mephitis and Mydax. The dental formula is that given by Lesson for Mephitis. The feter of the species of Mephitis has obtained for them the names of Petes myas, Enfons de Diable, and Stinking or Stifling Weasels. M. Lesson observes that a great number of these American Mephistes have been de

The Ferret.
scribed, but the imperfect accounts of voyagers render the
arrangement unsatisfactory. He notices the following:
Mephitis americana; Meph. triangulata; Meph. cheniens;
Meph. chihuah; the Chiche; Meph. quinquis, and Meph.
interrapa. Dr. Horstfield gives the following representa-
tion of the profile of front teeth of Mephitis dimidiatata
of Fischer, the Chiche of Buffon.

![Profile of Mephitis dimidiatata](image)

**We select as an example the Mephitis americana, var.
hudsonia, the Hudson's Bay Skunk.**

**Description.** — The following accurate description is
from the pen of Dr. Richardson. 'The Skunk is low on
its legs, with a broad fleshy body, wide forehead, and the
general aspect rather of a Wolverine than of a Marten;
eyes small; ears short and round. A narrow white nasal
line runs from the tip of the nose to the occiput, where
it dilates into a broad white mark. It is again narrowed,
and continues so until it passes the shoulders. When it
forks, the branches running along the sides, and becoming
much broader as they recede from each other. They ap-
proach posteriorly, and unite on the rump, becoming at
the same time narrower. In some few specimens the white
stripes do not unite behind, but disappear on the flanks.
The black dorsal space included by the stripes is egg-
shaped, the narrow end of which is towards the shoulders.
The sides of the head and all the under parts are black.
The hair on the body is long. The tail is covered with
very long hair, and has generally two broad longitudinal
white stripes above on a black ground. Sometimes the
colours of the tail are irregularly mixed. Its under sur-
f ace is black. The claws on the fore-feet are very strong
and long, being fitted for digging, and very unlike those
of Martens; (Fissota Boreali-Americana.)

This is the Seeac of the Cree Indians.

**Geographical Distribution, Habits, &c.** — The author
last quoted states that the Skunk is not an uncommon ani-
mal in the district it inhabits, which does not, he believes,
extend to the north of lat. 56° or 57°. It is found in the
rocky parts of the country, but is still more fre-
quently in the clumps of wood skirting the sandy plains of
the Saskatchewan. Dr. Richardson had not been able to
ascertain the southern range of this variety of Skunk; and
he adds, that judging from Kalm's description, there ap-
pears to be a different one in Canada.

The Skunk lays itself up in a hole for the winter, seldom
going abroad at that season, and then for a short distance
only. Mice and frogs in summer are its principal prey.
Lawson says, 'Voles or Skunks in America are
different from those in Europe. They are thicker and
of a great many colours; not all alike, but each differing
from another in a peculiar colour. They smell like a
fox, but ten times stronger. When a dog encounters
them they pise upon him, and he will not be sweet again in
a fortnight or more. The Indians love to eat their flesh,
which has no manner of ill smell, when the bladder is out.
I know no use their fur are put to. They are easily brought
up tame.' Professor Kalm was almost suffocated by one
that was chased into a house where he slept: the very
cattle bellowed through distress at the stench. Another
that was killed by a maid-servant in a cellar so over-
powered her that she lay ill several days: the provisions
in the place were so tainted that the owner was obliged
to throw them away. Catesby says, 'When one of them is
attacked by a dog, to appear formidable it so changes its
usual form, by bristling up its hair, and contracting its length
into a round form, that it makes a very terrible appearance.
This menacing behaviour however, insufficient to deter its
enemy, is seconded by a repulse far more prevailing: for
some secret duct, it emits such fetid effluviums, that
the atmosphere for a large space round shall be so infected
with them, that men and other animals are impatient till
they are quit of it. The stench is insupportable to some
dogs, and necessitates them to let their game escape;
others, by thrusting their noses into the earth, renew their
attacks till they have killed it, but rarely care to have more
do with such noisome game, which, for four or five hours,
disappear from them. The Indians notwithstanding esteem
their flesh a dainty; of which I have eaten, and found it
well tasted. I have known them brought up young, made
domestic, and prove tame and very active, without exercis-
ing that faculty, which fear and self-preservation perhaps
only prompts them to. They hide themselves in hollow
trees and rocks, and are found in most of the Northern
Continent of America. Their food is insects and wild
fruit.' (Carol. I.) Dr. Richardson states that the noisome
fluid which it discharges is of a deep-yellow colour, and
contained in a small bag placed at the root of the tail. It
is, he says, one of the most powerful stenches in nature,
and so durable that the spot where a Skunk has been killed
will retain the taint for many days. He quotes Graham
for the fact that several Indians lost their eye-sight in con-
sequence of inflammation produced by this fluid having
been thrown into them by the animal, which has the power
of ejecting it to the distance of upwards of four feet.
'I have known,' says Dr. Richardson in continuation, 'a dead
Skunk, thrown over the stockade of a trading post, pro-
duce instant nausea in several women in a house with
closed doors upwards of a hundred yards distant. The
odour has some resemblance to that of garlic, although
much more disagreeable. One may however soon become
familiarized with it; for, notwithstanding the disgust it
causes at first, I have managed to skin a couple of
recent specimens by recouring to the task at intervals.
When care is taken not to soil the carcasse with any of
the strong-smelling fluid, the meat is considered by the
natives to be excellent food.'

![The Skunk](image)
WEAVER BIRDS. _Ploceina_, a subfamily of Fringillidae, in which article and in _Vidua_ the opinion of zoologists as to their place in the system was fully discussed. The genus _Ploceus_ of the Weaver birds is thus defined by Mr. Swainson.

Size small. Bill conic, but with the culmen slightly bent, and the tip entire. Under mandible less thick than the upper. Claws large, very long. Wings pointed.

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The birds in question are said to construct their nests in one clump and under one roof or cover, each nest having a separate entrance on the under side, but not communica-
ing with the nest next to it from within. A space of ten feet in diameter is stated to be sometimes reached by these aggregated sylvan dwellings comprising a bird-popula-
tion of some hundreds.

Paterson thus describes the operations of these social
winged citizens:— The industry of these birds seems
almost equal to that of the bee. Throughout the day they
appear busily employed in carrying a fine species of grass,
which is the principal material they employ for the pur-
pose of erecting this extraordinary work, as well as for
additions and repairs. Though my short stay in the
country was not sufficient to satisfy me by ocular proof
that they added to their nests as they annually increased
in their numbers, still, from the many trees which I have
seen borne down by the weight, and others that I have
seen with their boughs completely covered over, it would
appear that this is really the case.

When the tree that is
the support of this serial city is obliged to give way to
the increase of weight, it is obvious that they are no longer
protected, and are under the necessity of building in other
trees. One of these deserted nests I had the curiosity to
break down, to inform myself of the internal structure of
it, and found it equally ingenious with that of the exter-
nal. There are many entrances, each of which forms a regular
street, with nests on both sides, at about two inches' dis-
tance from each other. The grass with which they build
is called the Boshman's grass, and I believe the seed of it
to be their principal food, though, on examining their nests,
I found the wings and legs of different insects. From
every appearance, the nest which I dissected had been in-
habited for many years, and some parts were much more
complete than others. This therefore I conceive to amount nearly to a proof that the animals added to it at different times, as they found it necessary, from the increase of their family, or rather of the nation and community.'

One of these bird-towns is also figured in Mr. Wood's 'Zoography,' and we here endeavour to present a sketch of part of the plate.

Another weaver's nest, that of *Ploceus icterocephalus*, Sw., brought together with the male, female, and eggs, from South Africa to Mr. Swainson, is thus described by him:—'The nest is somewhat kidney-shaped, seven inches long, and four and a half broad: it is attached to a very slender branch, from which there are four other young shoots, which serve as so many holds for its support, and to which it is firmly fixed by bendings of strong grass leaves. The whole is very compactly made of the same materials, interlaced most ingeniously, and far more firmly than what is seen in the chaffinch or other of our most skilful builders: the lining is the heads or panicles of the grasses, thus uniting softness and coolness, the latter being an obvious advantage in so sultry a climate. The aperture is lateral, near, but not upon, the top, so that it serves the purpose of a window to the inmates, who are sheltered overhead by the convex top of the nest. There is something very ingenious in the construction of this opening, which is not, as it first appears, round, but semicircular, the arch being bound round with a stronger band than usual, and the plane or base, much stronger, and composed of straight pieces of the stalks of grass, evidently for the purpose of giving to that part upon which the birds perched greater strength and substance.'

Mr. Swainson, after remarking that lateral openings to the nests of African birds are very common, goes on to observe that the rains of South Africa and of tropical America are, perhaps, equally violent while they continue; but then the small leaved and scanty foliage of the trees in the former locality leave the nests of such birds as are upon them much more exposed to these torrents than are the nests of the birds of Brazil, where the foliage is particularly thick and broad; and he inquires whether this may not be one of the causes, at least, why nature has so especially taught the African birds to construct their nests in the manner alluded to? Snakes, he observes, are equally common in both regions, yet, with the exception of the Hangnests, and a very few others, as *Synallaxis garrulus* [**Synallaxis**], and *Donacobius coeciferans*, &c., he declares that he is unacquainted with any other Brazilian birds which depart from the ordinary style of building.

Dr. Smith, in his *Zoology of South Africa*, a considerable portion of which he accurately observed with the eye of a philosophical zoologist, expresses his decided opinion that the fear of injury from small quadrupeds and snakes operates upon the birds of that country in their choice of trees overhanging pools of water as the localities for their nests. 'There can be no doubt,' says he, 'that parental affection dictates the choice. All the birds of South Africa are liable to have their nests robbed by small quadrupeds and snakes, and as no position is so likely to secure them against such misfortunes as those we have mentioned, they are doubtless selected under that conviction.'

Most deadly enemies do these same snakes appear to be to the South African birds, and the same distinguished author, in his elaborate account of the varieties of *Buc- phalus capensis*, *Boom-stange* of the colonists, which he does not consider poisonous for reasons which he states in his work, gives the following description, which, while it shows the natural dread of the bird affords a very interesting illustration with regard to the alleged fascination of serpents. 'The Boom-stange,' says Dr. Smith, 'is generally found upon trees, to which it resorts for the purpose of catching birds, upon which it delights to feed. The presence of a specimen in a tree is generally soon discovered by the birds of the neighbourhood, who collect around it, and fly to and fro, uttering the most piercing cries, until some one, more terror-struck than the rest, actually seizes its lips, and almost without resistance becomes a meal for its enemy. During such a proceeding the snake is generally observed with its head raised above ten or twelve inches above the branch round which its body and tail are entwined, with its mouth open and its neck inflated, as if anxiously endeavouring to increase the
tectorial, it would almost appear it was aware would sooner or later bring within its grasp some one of the feathered group. Whatever may be said in ridicule of fascination, it is nevertheless true that birds, and even quadrupeds, are, under certain circumstances, unable to retire from certain of their enemies; and, what is even more extraordinary, unable to resist the propensity to advance from a situation of actual safety into one of the most imminent danger. This I have often seen exemplified in the case of birds and snakes; and I have heard of instances equally curious, in which antelopes and other quadrupeds have been so bewildered by the sudden appearance of crocodiles, and by the primacies and contortions they practised, as to be unable to fly or even move from the spot, towards which they were approaching to seize them.

We now proceed to lay before our readers some of the species of this interesting group of birds.

_Ploceus spinolonas_, Vigors.

Description.—Upper part of the head gamboge-yellow slightly glossed with honey-yellow; sides of the head, chin, and a narrow line stretching from the latter to the breast, dark liver-brown verging on black; sides of the neck immediately behind the ear coverts, breast, belly, vent, and under tail coverts, light gamboge-yellow, lateral fringes of the breast tinted with saffron-yellow. Lower part of the back and sides of the neck, interseparans, and back, liver-brown, each feather broadly tipt with lemon-yellow; rump yellow, blotched with liver-brown. Lesser wing coverts, primary and secondary quill coverts, primary and secondary coverts of tail, and a saddle at the base of the lower tail feathers, light chocolate-brown, the primaries and their coverts edged externally with king's-yellow, the others tipt and edged on both vanes with the same colour. Tail light greenish-brown, the feathers faintly margined externally with king's-yellow, and internally with primrose-yellow. Bill brownish-black. Eyes deep vermilion-red. Feet flesh-coloured, tinted with brown; claws pale horn-colour. Total length from point of bill to tip of tail seven inches. (Smith.)

The above is the description of the _male_; nothing, according to Dr. Smith, is known of the _female_.

This is the _Ploceus stictonotus_ of Smith (South African Quarterly Journal); and _Ploceus flaviceps_ of Swainson (Birds of West Africa).

Locality and Habits.—Dr. Smith states that this Weaver inhabits the districts bordering on the south-east coast of Africa; but he had not seen nor heard of its being found to the westward of Kafirland. It is rare, and generally seen on the banks of rivers. From the trees that overhang the waters these birds suspend their nests of a somewhat kidney form, composed of blades of grass so closely interwoven as to form a complete protection against the weather. Dr. Smith, who gives this account, states that the female lays three or four eggs of a delicate greenish-blue, and about the size of those of the Common Sparrow. Mr. Swainson says that his specimen was received from Senegal.

Of _Ploceus capensis_, Smith, (P. abysinnicus, Cuv.), Dr. Smith states that it is diffused over the more southerly districts of South Africa, and that flocks of from ten to forty individuals are often to be seen on or near the edges of the larger rivers and along the banks of streams. From them, when seized by the hands they suspend, he says, their nests; five or six of which are sometimes attached to a single branch. These nests are somewhat kidney-shaped, with the entrance towards the upper end, and directed downwards. Dr. Smith adds that they take up the nearest pools of water are invariably preferred, and the twigs which approach nearest the water are commonly best supplied with nests.

The head-quarters of _Ploceus subauratus_ and _Ploceus ocularis_ be looked for, according to Dr. Smith, to the northward of the Tropic of Capricorn: at least is scantly comprised of any species to the southward of it, in his opinion, warrant such an inference. During a residence of fourteen years in South Africa, he only met with four specimens of _Ploceus ocularis_ and _Ploceus subauratus_. The specimens of _subauratus_ previously himself were all killed in the neighbourhood of Algoa Bay, and those contained in the collections submitted to his inspection were either obtained in the same locality or more to the eastward.

Dr. Smith says that the females of the individuals of _Ploceus ocularis_ any disposition to congregate—at least he rarely found more than the male and his female associated together, and these were generally discovered in retired situations, well supplied with trees, and the nests of these birds are constructed with a line of delicate fibres of bark closely interwoven, so fashioned as to present, when complete, the form of a retort. The three blush-white eggs are sparingly spotted with dusky brown—the large extremity having the large extremity having the Occasionally numerous spots upon other eggs. The male and male and female sit alternately, and, while so occupied, are so devoted to their duty, that they may with the greatest ease be taken in the nest alive.

_Phitelerus lepidus_, Smith.

Description.—Figure rather slender; bill more compressed than in _Euplectes_; culmen slightly arched from the base; commissure sinuated; legs and toes strong; tarsi in front covered by transverse plates, the margins of which are distinctly defined; outer and inner toes nearly of equal length; claws pointed and much curved, the hinder one not so long as in the typical species of _Euplectes_; wings, when folded, reaching to about the middle of the tail. First or spurious quill-feather very short, scarcely discernible; second, third, and fourth, nearly of equal length; and the longest; extremity of the tail slightly rounded. (Smith.)

Male.—Dr. Smith describes the top of the head, the neck, and the back as of a drab-brown; back and sides of the neck and interscapulars amber-brown; edging of these feathers with pale isabella colour; chin and a stripe at the base of the bill which terminates on a line with the eye, black. Wings and tail light amber-brown; tertiary quill feathers broadly edged and tipt with isabella, of which colour are the tail-feathers, also, at the base. Head, under part of the neck, breast and belly pale isabella; flanks pale rusty brown; on the front of each thigh a deep black stripe; the feathers margined with yellowish-white. Bill and legs a pale horn-colour, the former slightly curved and black brown. Eyes dark reddish-brown.

Female.—Differing from the male in having the feathers of the back and sides of the neck and interscapulars light brown instead of amber-brown.

Young.—Head streaked with brown, the patch in front of the thighs consisting of the back of the larger species, black spots. No appearance of black on the chin or at the base of the bill.

Length from the bill to the point of the tail, 4 inches 8 lines.

This is the _Loxia socius_ of Latham; _Ploceus socius_ of Cuv.; _Philetairus lepidus_ of Smith; and _Euplectes lepidus_ of Swainson.

Geographical Distribution and Habits.—Dr. Smith states that the banks of the Orange River appear to constitute the southern limit of the range of this species, which was only obtained in great abundance in the districts round Latakoo far from water. ‘The most striking peculiarity,’ adds Dr. Smith, ‘observed in this species is the extraordinary
nary manner in which a number of individuals associate, and build their nests under a common roof. When a nesting place has been selected, and the operation of building

mediately proceed conjointly to construct the general covering which interests them all; that being accomplished, each pair begins to form their own nest, which, like the roof, they construct of coarse grass; these are placed side by side against the under surface of the general covering, and by the time they are all completed, the lower surface of the mass exhibits an appearance of an even horizontal surface, freely perforated by small circular openings. They never use the same nests a second time, though they continue for many years attached to the same roof. With the return of the breeding season, fresh nests are formed upon the lower surface of those of the preceding year, which then form an addition to the general covering. In this manner they proceed year after year, adding to the mass, till at last the weight often becomes such as to cause the destruction of its support: upon which a new building is selected. They appear to prefer constructing these nests upon large and lofty trees, but where such do not occur, they will even condescend to form them upon the lea\vs of the arborescent aloe (Aloe arborescens), as occasionally happens towards the Orange River. The commencement of the roof is firmly interwoven with the branches of the trees to which it is intended to be suspended; and often a great part of a principal branch is actually included within its substance. Each female lays from three to four eggs, which are of a bluish-white colour, and freely mottled towards the large end with small brown dots. When once this species has attained maturity, it never afterwards exhibits any change in respect to colours. The male has no summer tints which he throws aside in winter, as is the case in Euplectes. Seeds, and occasionally small insects, constitute the food.

Euplectes talha, Smith.
Description.—Male; summer plumage. Crown of head, back, upper and under tail-coverts, vent, and a narrow oblique stripe on each side of the breast immediately in front of the shoulders, bright yellow shoulders, quill-feathers, and tail, grey-brown; shoulder feathers, and the outer vanes of the quill-feathers, faintly edged with dirty-white; sides of shoulders pale creamy-yellow varying on the white; thighs pale yellow freckled with brown. Space in front of the eyes, sides of the head, stripe on each side of back adjoining the bases of the wings and all the under parts of the body as far as the vent, deep brownish-black. Head light umber-brown, the lower mandible lightest. Feet and claws yellowish-brown; eyes brown.

Male; winter plumage. Above, pale yellowish-brown; head, neck, and interscapulars freely dashed with longitudinal brownish-black stripes or blotches, and the back and upper tail coats with faint narrow stripes of the same colour. Eye-brows yellowish-white; ear coverts pale rusty brown; under parts of body greyish-white, throat and breast tinged with siena-yellow, and these as well as the flanks narrowly streaked brown. Bill, particularly the lower mandible, lighter than in summer.

Adult Female.—Coloured in summer and winter nearly the same as the male in winter. (Smith.)

Geographical Distribution and Habits.—Dr. Smith states this species does not appear to extend south of 26°, at least he discovered no individuals before he reached that latitude. The natives more to the southward seemed to be unacquainted with the bird. In the districts to the north of 26°, however, it was common, and large flocks were often observed among the trees near the banks of rivers. Dr. Smith further remarks that though they were generally among trees at the time he passed through the country, he was informed that they leave them at the commencement of the breeding season, for the reeds which skirt the rivers here and there, and from which they suspend their nests. They are, he states, very destructive to gardens, like Euplectes oryz, in the summer, and the natives are obliged to watch their crops to prevent them from being devoured by one or other of their species.

Dr. Smith enumerates the following species of Euplectes as inhabitants of South Africa:—oryz (Loxia oryz, Linn.), capensis (Loxia capensis, Linn.), and taha.

Plocepasser mahali (Agrophilus, Sw.).

Description.—For head, top of the head, nape, lores, and stripe from the angles of the mouth to the top of the neck, liver-brown; sides of the head and ear-coverts broccolli-brown, tinged with yellowish-brown; eye-brows broad, dusky white. Upper and lateral parts of the neck, interscapulars, back, and lesser wing-coverts intermediate between brocstioli and wood brown; last row of the lesser wing-coverts broadly tipped with pale cream-yellow; primary and secondary quill-coverts light liver-brown, the former narrowly, the latter broadly margined with rusty white; rump and upper tail-coverts yellowish white; tail-feathers liver-brown, tipped and narrowly edged externally with rusty white. Chin, throat, vent, under tail-coverts, and thighs dusky white; breast, belly, and flanks, dirty cream-yellow, inclining to pale wood-brown. Bill dull yellowish-brown, shaded with brownish red; legs, toes, and claws same colour. Eyes deep brownish orange. Length from point of bill to tip of tail 6 inches 64 lines.

Female very similar to male in colour. (Smith.)

Geographical Distribution and Habits.—Dr. Smith first saw this bird upon a tree on one of the tributaries to the Orange River. The nests in figure and texture had many of the characters of those of Ploceus, but resembled those of some of the South African Pyrgites in the manner in which they were armed. The walls of each nest were entirely composed of stalks of grass, the thickest extremities of which were so placed as to protrude externally for several inches beyond the compact structure destined to contain the eggs. Thus each nest appeared armed with numerous projecting spines, and bore considerable resemblance to the body of a porcupine with its spines partially erected. Several of the Pyrgites, Dr. Smith remarks, arm their nests after the same fashion; but they select for the purpose the delicate twigs of shrubs or brushwood, instead of stalks of grass. The object of both is, he observes, to offer an obstacle to the advance of snakes towards the eggs and young. Dr. Smith adds that a solitary specimen of Plocepasser is seldom seen, and that the bird is disposed to congregate. He met with small, and even occasionally with large flocks, as far north as the Tropic of Capricorn. Twenty or thirty nests were to be seen upon one tree. Seeds and insects are the food, and, in search of these, the bird passes much time upon the ground. If disturbed when thus feeding, the flock move away in a body to a neighbouring tree, where they remain till they are satisfied that they may return to their employment.
Smith, and Plcpepasser supercinlus (Agrotillus super-
citius, Sw.).

Textor erythrorhynchus.

Description.—Head, upper and under parts, the last
half of each primary quill, all the secondary quills, and
the tail, blackish-brown; first half of each primary quill
white, outer vanes of a few of those nearest to the second-
aries margined with the same colour almost to their
points. Bill light yellowish-red, clouded with shades of
purple-red; legs and toes yellowish-brown, the former
stinted with yellowish-red; claws livid-umber-brown. Eyes
dark brown.

Female.—The brown tint more distinct than in the
male; in other respects very similar in colour.

Young.—Dusky liver-brown; feathers of breast and
belly broadly margined with white. Slight indications
of such white margins are often to be observed upon the
feathers of the sides and body in adults. (Smith.)

avocation, and pursue a course similar to that just
described, provided the like circumstances recur. We never
found this bird attaching itself to any quadruped but
the buffalo, nor did we ever find the latter with any
other attendants, though we found in the country in which
both exist two other birds in the habit of feeding upon pa-
ristical animals, namely Buphaga Africana and erythrho-
rhynchus. These restricted their visits exclusively to the
roosters. (* Art. 256.

WEAVING. If we take the term 'weaving' in
its broadest sense, as applying to the process of combing
longitudinal threads into a superficial fabric, it will have
relation to the whole series of textile manufactures; not
only to those which are prepared in the loom, but net-
work, lace-work, and hosiery. We shall endeavour
therefore in the present article to complete the details
of manufacturing many textile fabrics which have been par-
tially described in former articles; and as, to effect this,
the sort of class distinction will be desirable, worthy stories
after briefly noticing the state and progress of weaving
among the antients, to proceed thus—Plain Weaving;
Pattern Weaving; Double Weaving; Cross Weaving;
Chain Weaving; Pile Weaving; Power Weaving.

From many passages in the Bible, and from the general
character of dress, it is apparent that woven fabrics were
worn in very early times. In a state of society where
there was practised before spinning; that is, the combination
of reeds, strips of leather, or rude fibres into a material for
dress, by a process analogous to that of weaving, preceded
the practice of spinning yarn from a congeries of element-
aries.

Sir J. G. Wilkinson, in his work on Egypt, (Man-
ners and Customs of the Antient Egyptians), obse-
res, the Egyptians, from a most remote era, were cele-
bated for the manufacture of fabrics, and the produce
of their looms was exported to, and eagerly purchased by,
foreign nations. The fine linen and embroidered work, the yarn and woollen stuffs, of the
upper and lower country, are frequently mentioned,
and were highly esteemed. The same authority tells
that the looms, found depicted on the tombs at Thebes,
are of an exceedingly rude construction; but he does not
think that this circumstance militates against the prod-
uction of fine fabrics, since it is known at the present
day that the Hindues produces excellent materials on
the rude loom. In a specimen of mummy-cloth, examined by Mr.
Thompson, the texture was close and firm, yet elastic;
the yarn of both warp and weft was remarkably even and well
spun; the web was single, while the warp-yarn consisted
of many threads. The weaver, or weavers, was unable,
in that as well as in other specimens, that the number
of threads to an inch in the warp uniformly exceeded that
in the weft, a difference not commonly observable in Euro-
pesian fabrics. Mr. Thompson is led to conclude that
being brought to England by Salt and Belzoni, and found that
the 'selvages' were well made, that striped goods similar
to modern ginghams were often made by the Egyptians,
and that indigo was one of the dyes. Wilkinson
gives copies from some of the pictures at Thebes, Beni
Hassan, and Eileithyas, representing weavers at their
looms; in one instance the loom appears to be horizontal;
while in another it is vertical, with the weft driven up-
wards; and from representations of five different sorts of
weaving the writer appears to have evidence that they were generally about
half a yard in length.

Mr. Yates (art. 'Tela,' Smith's Dictionary of Greek and
Roman Antiquities) has collected most of the authentic
details respecting the art of weaving among the Greeks
and Romans, from which we have extracted the
illustrations.

Weaving was carried on as a distinct trade in the larger
towns; but every considerable private establishment had
also a loom at which the females of the family were em-
ployed; the weaving being carried on by females, while the superintendent rested with the mistress
and her daughters. In large houses a particular room was
set apart for this occupation. The Greeks and Romans
differed from the Egyptians in this, that the weaving
was among the ladies, and performed by women;
while among the Greeks and Romans it was a female em-
ployment. The shawls furnished to the temples were
woven by women, in some cases attached to the more opulent temples, but in other cases independent of them; thus the sixteen women who lived together in a building destined to their use at Olympia, wove a new shawl every five years, to be displayed at the games which were then celebrated in honour of Hera, and to be preserved in her temple. Plato mentions one of the most important differences between the warp and the weft, viz. that the threads of the former are strong and firm in consequence of being more twisted in spinning; whilst those of the latter are comparatively soft and yielding; a comparison which is strictly applicable at the present day. Mr. Yates remarks that the parallelism or interlace of the loops in the warp is a feature to show the analogy between the ancient Greek loom and the modern so-called hand-loom; both having the warp-threads vertical; whereas in the improved looms of modern times the warp is always horizontal. The Greeks evidently understood much of what is now termed "mounting a loom," that is, arranging strings in such a manner as to separate the warp-thread into two or more groups, between which the weft may be introduced: the leafl (πήρος) being one such string, and a hole or the even length termed a θρόνος; these strings, according as it contained two, three, or more groups of strings, or, as we should now say, leaves or heddles. After the weft was thrown, it was driven up, either by a kind of bat, called a σπάθα, or by a kind of eel, both of which appear to have been combined in the "batten" or "lay" of the modern loom. The "check" produced by having different coloured warp threads, and "stripes," formed of multicoloured wefts, were known to the Greeks and Romans; as were likewise numerous kinds of fancy weaving derived from those two combinations. Mr. Yates endeavours with this remark: "As far as we can form a judgment from the language and descriptions of antient authors, the productions of the loom appear to have fallen in antient times very little, if at all, below the beauty and variety of the fabrics produced in those countries and those times, so far as it differs from modern European weaving. The Hindoo weaver takes his station under the trees, where he stretches his warp-thread between two bamboo rollers, which are fastened to the turf by wooden pins. He digs a hole in the earth large enough, stands up to his lesls, in a sitting posture; and then, suspending to a branch of a tree the eords which are intended to cause the raising and depressing of the warp-threads, he fixes underneath two loops for his toes, by which he produces a substitute for true bobbins. He then sets up a frame as a stool or table, completes his simple arrangements. With such rude apparatus as this is the process of weaving conducted in nearly all the villages throughout India. We will now compare these methods with the mode of procedure in modern Europe.

Plain Weaving.—By the term "plain weaving" we mean the weaving of all varieties of textile manufacture, whether of silk, cotton, woolen, or linen, in which the warp threads interlace uniformly among the warp threads without producing twills, checks, stripes, springs, or any variety of figures. Cilician, Irish linen, and plain silk are good representatives of this kind of weaving. If we examine any of these, we shall find that the cross threads pass alternately over and under the warp threads one thread passing over and under two other threads at one. In the language of weavers, the long threads are called warp, twist, caine, or organzine; while the cross threads are called weft, woof, shoot, or tram. Twist is the general term applied to the kind of yarn employed in the warp; organzine is that for silk, and some other of the terms have in like manner only partial application; if therefore we speak simply of warp and weft, we shall avoid ambiguity, and be sufficiently correct for the object in view. The warp is always affixed to the loom on the weaving machine; while the weft is contained in the shuttle, a small boat-like instrument. The winding of the weft on the spindle which runs through the shuttle is a simple matter; but the arrangement of the warp in the loom is very important, and must be understood before we enter into the process of weaving.

The first operation consists in laying the requisite number of threads together to form the width of the cloth; this is called warping. Supposing there to be 1000 threads in

Fig. 1.

the width of a piece of cloth; then the yarn, wound on the bobbins as it leaves the hand of the spinner, must be so unwound and laid out as to form 1000 ends, constituting when laid parallel the warp of the intended cloth. The antient method was to draw out the warp from the bobbins at full length in an open field; and this is still practised in India and China; but the climate of Europe is too uncertain for such a method, and hence the warping-frame was devised. This is a large wooden frame fixed up vertically against a wall, the upright sides being pierced with holes to receive wooden pins, which project sufficiently to receive the end or group of yarns. The warper, having placed the bobbins of warp on a recent frame, ties the ends of all the threads together, and attaches them to one of the pins; then gathering all the threads in his hand into one bundle, and permitting them to slip through the fingers, he sets the loom into motion, where he passes the yarns over the fixed pins. He walks from end to end of the frame, attaching the clew of yarns to the pins each time, until he has unwound from the bobbins enough yarn to form the warp. But this method, although still followed in some places, is too laborious. The warping-mill, a much more convenient piece of apparatus. The bobbins are placed in a frame E (Fig. 1). The warper, sitting at A, rotates the vertical reel, or cylinder B, by means of the wheel C and the rope D. The yarns from all the bobbins, collected together in a group at F, pass through a sliding piece, which, through the intervention of the eord G and the revolving shaft H, rises and falls. By this arrangement it is easy to see that when the handle is turned by the warper, the clews become wound spirally on the reel. The diameter of the reel is so regulated, that when the spiral equals the intended length of the warp, the clews of yarns is twisted round pins p, q, r, s, and then by a reverse motion of the handle is wound spirally down again; and so on up and down alternately until the grouped clews of yarns constitute a sufficient number for the width of the warp. Certain minor adjustments are at the same time made. The modern warping-machines we have to mention when we come to 'power-weaving.' When the warp is completed on the warping-mill, the warper takes it off and winds it on a stick into a bale, preparatory to the process of beaming, or winding it on the beam of the loom. The threads, in this latter process, are wound as evenly as possible on the beam; a separator, ravel, or comb being used to lay them parallel, and to spread them out to about the intended width of the cloth. Arrangements are then made for dressing, or attaching the warp-threads individually to certain mechanism of the loom. This we may illustrate by Fig. 2, representing the common loom in its simplest state. The yarn-beam is at B, with the machine revolving, and allowing the threads to be drawn out in a horizontal layer B. At F are two leaves of heddles or reeds, each leaf consisting of a number of strings ranged vertically, attached at bottom to
two treads H H, and at top to a cross-bar F. At about the middle of every heddle or string is a loop or eye, through which the warp-yarns are drawn, one through each eye; and the passing of the yarns through these loops constitutes the process of dressing. Half of the warp-yarns, that is, every alternate yarn, pass through the loops in one leaf of heddles, and the other half through the other leaf; and so the two leaves are so connected by pulleys as to cause one to rise when the other sinks, the warp becomes divided into two portions, one above the other, near the anterior end of the loom. The weaver sits at G, drives the shuttle by means of the handle I, and draws up every successive weft-thread by the batten, lay, or lathe, E, suspended from F. The succession of movements must be noticed somewhat more in detail in the next paragraph.

There are three movements attending every thread of weft which the weaver throws across the warp. In the first place he presses down one of the two treads, by which one of the two halves of the warp is depressed, thereby forming a kind of opening called the ‘shed.’ Into this shed, at the second movement, he throws the shuttle containing the weft-thread, with sufficient force to drive it across the whole web. Then, at the third movement, he grasps the batten, which is a kind of frame carrying at its lower edge a comb-like piece having as many teeth as there are threads in the warp, and with this he drives up the thread of weft close to those previously thrown. One thread of weft is thus completed, and the weaver proceeds to throw another in a similar way, but in a reverse order, that is, by depressing the left tread instead of the right, and by throwing the shuttle from left to right, instead of from right to left. In the commonest mode of weaving the shuttle is thrown by both hands alternately; but about a century ago John Kay invented the ‘fly-shuttle,’ in which a string and handle are so placed that the weaver can work both shuttles with one hand. The fly-shuttle is illustrated in Cut 3, while Fig. 3 will show more clearly the mode in which the weft is wound round.

The spindle or pin of the shuttle, and the most improved arrangement for driving the shuttle into the open shed of the web. The spindle of the shuttle contains enough weft for several shots or throws; the shuttle travels along, and forming the ‘selvage’ of the cloth when the shuttle returns in the opposite direction.

In cotton and some other fabrics, the warp-yarns must be ‘dressed’ as the weaver proceeds, that is, rubbed over with some kind of vegetable substance, such as lime, for the purpose of giving them tenacity, of diminishing friction by smoothing down the little hairy filaments of the yarn, and of imparting a smoothness or gloss. In hand-weaving, the weaver suspends his operations from time to time, in order to apply dressing to the warp, first applying a kind of comb to the warp, to clear away knots and burrs; then lays on the paste with a brush; and lastly dries the paste by a current of air excited by a large flame. The more modern and complete ‘dressing-machine’ we shall have to notice in connection with ‘power-weaving.’

In weaving plain silks, calicoes, and other webs of moderate width, there are two leaves of heddles and two threads of the warp thrown into two parcels. In weaving broader webs, such as floor-cloth canvases, the heddles and treads are equally simple, but more power and dexterity are necessary in throwing the shuttle, since the width of the web is sometimes as much as eight yards. In weaving very fine webs such as lawn, muslin, damask, where there would be a waste of power and of time if only one shuttle were thrown across a distance of two or three inches at each movement; and there has consequently been devised a kind of loom called the ‘engine-loom,’ in which several shuttles are thrown across at the same time, and which will save much time.

Patterns, or designs, which can be worked into the warp or filling of the web can also be produced by dressing them on the weft. The weaver must, of course, keep them in mind, and be prepared to repeat them when they come up. But this is not the case with a power-loom, when many patterns are at the weaver’s command, in case he is not experienced enough to be able to remember them all. In weaving, therefore, patterns are not so much the province of the weaver as of the manufacturer.

In the first place we may take the case in which all the threads of the warp are the same colour, and all those of the weft another colour; this produces the peculiar effect called shot patterns, but involves no new arrangements as to weaving. Next come the two varieties known respectively as stripes and checks. A stripe is a pattern in which two parallel lines run across the web; a check is an alternation of rectangles like a chess-board, or more properly like the varieties of Scotch plaid. The production of a stripe depends either upon the warp or weaver; the production of a check depends upon both. The stripes are of the same colour, and extend lengthwise of the cloth, then the weaver so disposes the threads of his warp that the two colours shall succeed each other at regular intervals; but if the stripes are of the same colour, but of different quality as to fineness, then the warp and weft are two qualities of warp in alternate succession. If the stripes extend across the cloth, the weaver arranges his threads as for plain weaving; but the weaver uses two or more shuttles, carrying two or more differently-coloured wefts, and throws the shuttles in regular intervals, so that the alternating of the long stripes with the cross-stripes produces the effect of a design, the terms of which depends on the comparative width of the various stripes. The manner of using the combined shuttles is described under Check.

The next to be noticed is the production of the twill, a very extensively adopted variety of woven work, since it comprises satin, bombazene, kerseymere, and numerous other kinds. In the twill, the warp-threads do not pass over and under the warp-threads in regular succession; but pass over one and under two, over one and two, or over two and under one, according to whether the web, or one or two, or eight or ten according to the kind of twill. The effect of this is either of diagonal ribbed appearance, or

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the 'wrong' side of the cloth, and a smooth and glossy appearance on the other, according as the one thread is crossed above or below by the weft. Fig. 4 will assist our comprehension of this point. If we suppose the round dots to be sections of successive warp-threads and the white double line to be one thread of weft, we shall see that the second round of four under, over four, under four, over four, under, over four, and if the specimen were continued, we should see that these cycles of changes succeed each other in regular order. This arrangement furnishes the ‘twill’ for some particular varieties of cloth and has been produced in a kind of formation called diaper, dinty, dornock, damask, bombezen, satin, kersey, mere, &c.; each one having a certain order of succession in which the weft crosses the warp. (A few particulars will be found under Bombezen and Damask.)

Now in order to allow the weft to pass under four or more threads at once, some mechanism must be devised for elevating all those four at one movement, or of keeping them stationary while every fourth thread is depressed. If the weft always passed under the same four threads, no cloth would be produced, for naturally it would be made; but the groups of four passed under one weft-shoot are not the same as those crossed at the next following shoot. Hence more than two leaves of heddles are required, and more than two treadsles to work them. There must in number thus be a greater number of heddles than there are treadsles; each of which fifth warp-thread is attached; and to each of these leaves a treadle is appropriated; so that when one treadle is pressed down, the warp-threads become drawn out of the horizontal plane; when another treadle is depressed, the leaves of heddles, to which each of fifth warp-thread is attached, are depressed, and the hole pass for the weft is made. By various combinations among his five treadsles, he can produce many varieties of movement, which give rise to different kinds of twills.

When, instead of or in addition to a twill, the weaver has to produce sprigs, flowers, spots, or any kind of figure, a great increase of complexity occurs. The weft may pass over four and under one at one part of the width of the cloth; over two and under two at another; over one and under four at the other; according to which figure which may happen to occur at any particular part of the width of the cloth. Hence the order in which the warp-threads must be depressed or elevated varies continually, and the number of leaves of heddles would become so great that in a few days, it might be necessary to change the warp-threads, or to find some method of preventing the feet of the weaver from moving them. This difficulty gave rise to the invention of the draw-loom, in which strings are so arranged that a boy can draw down the requisite warp-threads preparatory to the movement of the shuttle. The draw-loom, from the immense number of its vertical and horizontal strings, is a very incomprehensible piece of apparatus to a stranger, whether seen actually at work or represented in an engraving; but its principle, example enough. The warp-threads pass through eyes or loops in vertical strings, each threading one string; and these strings are so grouped that the attendant boy, by pulling a handle, draws up all those warp-threads which are necessarily elevated for one particular shoot of weft; and when the order of succession is required, he pulls another handle. Hence it follows that the arrangement of the strings and handles must be preconcerted with especial reference to one particular pattern; and this is called ‘cording the loom.’ The draw-loom would sometimes take one or four months, and would then only serve for one particular pattern.

Early in the present century we were made with the view of rendering the draw-loom more automatic. On the ‘draw-loom’ there is no necessity of employing a boy to pull the handles, but removed, by the unerring certainty of its operation, all possible chance of mistake in pulling the wrong handle. This was a very ingenious arrangement of mechanism by which a treadle, worked by the foot of the weaver, gave a vibratory motion to a curved lever which drew down some of the warp threads and elevated others; and the skill consisted in so causing the lever to travel along a rack or toothed bar as to act upon different warp-threads in succession. The weaver, however, employed, while another invention, equally ingenious perhaps, has from various causes failed to come into use. This latter was the automatic carpet-loom of Mr. Duncan. Here the warp-threads, instead of being elevated and depressed by the handles as in a draw-loom, or by the reciprocating lever as in the draw-boy, were moved by pins inserted in a rotating barrel, the pins being placed in an order of succession according to the pattern to be produced, just as those on the barrel of a street-organ or a banjo. The several blocks are disposed according to the tune to be played.

But the draw-loom, the draw-boy, and the barrel-loom have been alike eclipsed by the exqui- }

site apparatus of M. Jacquard, which is very properly named after the inventor, M. Jacquard. This apparatus has been introduced into the Spitalfields, where the makers of mat and damask have long been the leaders; we therefore give a description of its principle and action. The Jacquard apparatus is intended to elevate or depress the warp-threads for the reception of the shuttle. There is a hollow prismatic box, whose surfaces are pierced with a great number of holes; and to each face of the box is fitted a card also perforated in such a manner that the number of holes is the same on each face of the box. The perforations in the cards, where they occur, are correspondent in position with some of the holes in the box; but in other places they are blank. The holes represented on these cards consist of two vertical holes, which may be one or two hundred in number, and all form an endless chain. The box may have four, five, or more faces, according to circumstances. The principle of action may perhaps be explained thus:—Supposing each face of the box to have one hundred perforations, then there are a hundred small bars or needles ranged in a group in exactly the same order as the holes in the faces of the box, the ends of the bars being immediately opposite the holes. Each bar or needle is a lever by which certain warp-threads are raised or depressed; the pins or the parts of the warp-threads are moved longitudinally, the warp-threads become elevated or depressed. Now if the box have a reciprocating motion, so that one of its faces shall strike against the ends of the bars, the ends of all the bars will pass into the holes, the warp-threads will be depressed; but if it be covered, some of the bars will pass through the holes of the card into the holes in the box, while others, at the unperforated parts of the card, will be driven aside. Thus the bars became unequally acted on, and they in their turn act unequally on the warp-thread, as the latter reciprocally, perhaps, from various causes failed to come into use. This latter was the automatic carpet-loom of Mr. Duncan. Here the warp-threads, instead of being elevated and depressed by the handles as in a draw-loom, or by the reciprocating lever as in the draw-boy, were moved by pins inserted in a rotating barrel, the pins being placed in an order of succession according to the pattern to be produced, just as those on the barrel of a street-organ or a banjo. The several blocks are disposed according to the tune to be played.

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bestowed upon their performances the most painful amount of labour; the most beautiful products of the loom in the present day are however accomplished by men possessing only the ordinary rate of skill, while the labour attendant upon the actual weaving is but little more than that which makes the poorest goods.

Double Weaving.—In all the fabrics hitherto noticed, there is but one layer of threads, formed by the intersection of the web among the warp, both warp and weft being individually single. But there has long been practised the weaving of a kind of double cloth, composed of two webs, each consisting of separate warp and weft, but both sets interwoven at intervals. The junction of the two webs is formed by passing each of them occasionally through the other, so that each particular part of both is sometimes above and sometimes below. Kidderminster or Scotch carpeting is almost the only kind of double cloth now woven in this country; and it will therefore be sufficient for us to refer to the article Carpet for details.

Cross Weaving.—This term may be conveniently applied to those varieties of woven fabric in which the warp-threads, instead of lying constantly parallel, as in all the cases hitherto noticed, cross over or twist around one another, thus forming a plexus or interlacing independent of that produced by the weft. Gauze and Bobbin-net may be taken as the chief representatives of this kind of fabric. The former has been already slightly treated on [Gazze], and we will here glance rapidly over a few remarkable points in the history of the latter.

The production of light cross-woven goods, previous to the extraordinary development of the bobbin-net manufacture at Nottingham, was carried on only to a limited extent. Net was the generic name for these goods, and according as slight deviations were made in the mode of crossing the threads, so were distinctive names given to the material produced; such as whip-net, mail-net, patent-net, drop-net, spider-net, Paris-net, balloon-net, &c. All these varieties were produced at the loom, with warp-threads stretched horizontally, and weft-threads thrown across by means of a shuttle; and the difference between them depends on the manner in which the warp-threads were made to cross one another, and in which the web-thread was thrown. In the bobbin-net of later times however the plan is produced by a machine very different from the common loom, and among the most remarkable which our textile manufactures afford.

In 1777 a machine was invented at Nottingham for the manufacture of a kind of net on a principle somewhat similar to that of stocking-weaving; but this was soon superseded by another, which was manufactured what was then the point-net, invented by Mr. Lindley, and afterwards improved by Mr. Taylor and Mr. Flint. The point-net became so highly approved, that there were no fewer than 260 manufactories at work in the beginning of the present century. Next succeeded what was called the warp-net, which produced warp-net in successful competition with the point-net. Still however the net produced did not afford a good imitation of the bobbin-lace or pillow-net; and the Nottinghamshire net manufacturers threw out every inducement for the development of a machine which would produce such an imitation. At length, in 1809, Mr. John Heathcoat, a stocking-weaver of Loughborough, availing himself of an ingenious principle involved in a machine for making fishing-nets, invented a machine by Robert Brown, of Nottingham, produced and patented the bobbin-net machine, one of the triumphs of modern ingenuity. From this time a new field of industry became opened, into which capital and skill rapidly entered. The first of Mr. Brown's inch wide, the high bolt machine of Mr. Morley, the pusher-machine of Messrs. Mart and Clark, the circular-bolt machine of Mr. Morley, and the lever-machine of Mr. Leavers, were successive improvements on Heathcoat's bobbin-net machine, involving its main principle, but working it out more effectually.

The main points of difference between the bobbin-net machine and the common loom may be thus stated. In the former the warp-threads are vertical; in the latter they are horizontal; in the former they are doubled upon a brass bobbin so thin as to pass between the adjacent threads of the warp; in the latter it is contained in a shuttle an inch or more in width; in the former the transit of the web-thread, while passing between the warp, is at right angles to the plane of the web; the latter is parallel with that plane: in the former the successive meshes or intersections are driven up close to those before made, by a series of pointed wires catching in the loops; in the latter there are sometimes as many as three thousand bobbins or weft-carrying implements to one machine; in the latter there are seldom more than one or two shuttles: in the former each bobbin twists its web-thread round a warp-thread by a series of oscillatory movements of a pendulum; in the latter the twisting is effected rather by the movements of the warp than those of the web.

The activity to which the invention of the bobbin-net machine gave rise was quite extraordinary, and the profits accruing to the inventors were immensely great. In 1809 five guineas a yard was given for bobbin-net which can now be equalled for eighteen-pence; and quiltings or edgings, which obtained 4s. 6d. per yard in 1810, can now be equalled for three-halfpence. This enormous change which has been due partly to the introduction of the mechanical virtues of Mr. Brown's machine, and partly to the enormous progress of the manufacture, which are rendered all the more remarkable by the fact that in 1809 the manufactures of Nottingham and the adjoining villages, became the scene of an epidemic mania. Many, though nearly devoid of mechanical genius, or the constructive talent, tormented themselves night and day with projects of bobbins, pushers, looms, point-bats, and needles, dreams of wealth, and minds got permanently bewildered; several lost their senses altogether; and some, after cherishing visions of wealth, as in the old time of alchemy, finding their schemes abortive, sank into despair and committed suicide. 


] and certain statistical details which Mr. Felkin, of Nottingham, furnished to the Factory Commissioners about ten years ago, it appears that at that time the quantity of cotton used annually in 2,497,000 lbs., value about £100,000; that this was made into thirty million yards of net; value nearly two millions sterling; that 160,000 persons were employed in spinning, doubling, weaving, finishing, and embossing the net; that the fixed
and floating capital invested in the bobbin-net manufacture reached as high as two millions sterling; and that there were from four to five thousand bobbin-net machines then in England. Some of these machines produce net twenty-quarters or five yards in width; and it may with truth be said, that such a machine, with its three or four thousand delicately-arranged bobbins, and provided with a Jacquard apparatus, is one of the most exquisite pieces of mechanism which our manufactures can exhibit.

**Chain-Weaving.**—We may perhaps apply this term to a mode of using threads in which a series of loops is formed by means of a number of bobbins, the threads being interwoven with others as to form a kind of chain; and this chain-work may either be worked upon a ground woven at the loom, or may constitute the woven material itself. In the common kind of bobbin-net, that is, in which the warp is covered with silk or covered with threads, the warp of silk is covered with figures or letters by coloured threads, worked with the needle, the woven piece being held in the left hand. In the ‘lace-running’ and ‘tambouring,’ largely carried on in and near Nottingham, the operation approaches more nearly to a kind of weaving; for the bobbin-net, which forms the ground, is stretched horizontally on a frame (see ‘Penny Magazine,’ No. 700), and the lace-runner works a series of ornaments in the net by a needle threaded with coarse cotton, the pattern being previously marked or traced on the net. In the ‘hoop-net,’ a new kind of bobbin-net, the cotton thread is carried and fro between the meshes of the net by means of a very fine and small hook, which gives to the decorative figure thus produced much more the appearance of chain-work than the instance above mentioned. This kind of weaving was introduced into England in the early part of the present century to have occupied the early part of the present century to have occupied twenty thousand females in Great Britain, the muslin is stretched over a hoop, and there kept in its place by an ornament, which is thence, the hoop is then either between the knee and the chin of the operator, or (more generally) by a kind of pedestal, while the work-woman produces a kind of chain-work on the surface of the muslin. About thirty years ago Mr. Duncan invented a very ingenuity of the kind, which he described in his ‘Brewster’s Edinburgh Encyclopædia;’ but it does not appear to have maintained a permanent footing. More recently a method has been introduced at Manchester of embroidering silk goods by means of an ingenious instrument whose movements are governed on the principle of the pantograph. [PANTOGRAPH.]

Another kind of weaving which, coming midway between common weaving and needle-work, and combining something of the two, and ranked in the present class, is that which relates to rug-work and tapistry, in which, by means of links, loops, or stitches, various coloured threads are interwoven into a plexus or web, having an ornamental de

**The Manufacture of Stockings.**—The manufacture of stockings, whether by the humble process of knitting or by the use of the stocking-frame, is in strictness to be called ‘chain-weaving:’ for the fabric itself is actually produced by a series of links or loops in a thread of worsted, cotton, or silk. In the process of knitting, instead of one or a small number of districts, polished steel needles or wires are used to link threads together into a series of loops, closely resembling in their character the loops produced in tambouring. But the method has been almost entirely superseded by the ingenious **stocking-frame**, which we proceed to next notice.

A singular confusion pervades the early history of the stocking-machine, which neither Beckmann nor any other important inventor is connected in modern literature. There is a great jumble of persons, places, and dates in the accounts given of the invention and the inventor; but the version most generally received, and which is deemed to be corroborated by a picture and an inscription in the Stocking-weavers’ Hall, runs nearly thus: William Lee, of St. John’s College, Cambridge, was about the year 1589 expelled from the university for marrying contrary to the statutes. Having no fortune, the wife was obliged to contribute to their joint support by knitting; and Lee, while watching the motion of his wife’s fingers, conceived the idea of imitating those movements by a machine. According to another version, Lee, while yet unmarried, excited the contempt of his mistress by contriving a machine to imitate the primitive process of knitting, and was rejected by her; but both accounts agree that the stocking-frame was invented by Lee, and at about the date assigned. Having caught the use of the machine from his mistress and the rest of his relations, he established himself at Culverton, near Nottingham, as a stocking-weaver. After remaining there five years, he applied to Queen Elizabeth for countenance and support; but finding himself neglected both by her and by her successor, he came over to France, where Henry IV. and his sagacious minister Sully gave the inventor a welcome reception. On the death of the king, Lee shared in the persecution suffered by the Protestants, and was carried into prison. Sully, with grief and disappointed, at Paris. Some of his workmen made their escape to England, and under Aston, who had been Lee’s apprentice, established the stocking manufacture permanently in England.

In the year 1691, granted to the Frame-work Knitters’ (stocking-makers) Society of London a charter, which had been refused to them a few years before by Oliver Cromwell. Six years afterwards the number of stocking-frames in England amounted to 700, employing 1200 workmen, and the production of stockings amounted to millions; and the others: worsted for cotton was not then ranked among English manufactures. By the year 1714 the number of frames had increased to 8000 or 9000. Some years after this, the Frame-work Knitters’ Company attempted to restrict the woven stockings to cotton, on the ground that they were made up by the female hand, and that there was no advantage in the making and selling of the stockings; but the project failed. By the year 1733, about twenty years after the introduction of cotton stockings, the number of frames in England was 14,000. Mr. Jedediah Strutt of Belper, invented a frame which was a great improvement, and the stockingframers: he patented the machine, and the patent was twice contested, first by the hosts of Derby, and then by those of Nottingham; but the validity of the patent being established a few years later, he brought to market the machine which led by gradual improvements to the net-machines.

The common stocking-frame exhibits a quadrangular arrangement of upright posts, connected by cross-pieces at the top, and having on one side an additional piece of framing to support the weaver’s seat. Near where the weaver sits is placed a series of needles, which serve the placing of knitting-neddles in forming the loops; they are not straight needles, nor yet what would be termed hooks, but somewhat resembling a curling piece, or very short lancets, and they all act through the meshes of the frame and the whole of the needles depend upon the coarseness or fineness of the stocking. This degree of fineness is represented, for no adequate reason that we are aware of, by the number of loops contained in three inches of breadth, which varies from about forty to upwards of one hundred, or even more, for coarse or, as applied to hosiery. The stocking-frame is provided with a series of vibrating levers, called jacks, and these jacks, aided by other intricate apparatus, throw the stocking-yarn into such curvatures as to enable the needles to form the loops. The weaver has a bobbin of yarn on one side of his frame, from which he unwinds enough to lay across all the wires; he then, by moving certain treads with his feet and levers with his hands, forms this length of yarn into a round loop, and at the next movement, when forming another row of loops, he引 their number one row into the other, so as to form a kind of chain, which chain, extending both lengthwise and across, constitutes the web of the stocking. The precise mode of producing, even the length and breadth, and illustrated by figures, is exceedingly difficult to comprehend; and we shall therefore not enter into details unsuitable to our limits. Suffice it to say that one continuous thread forms both warp and weft, if we may apply these terms to the stocking-frame, as well as the common weaver, who is tied to knots such as occur in making nets, the meshes are loose, and may be easily undone if not secured at the edges, but at the same time the web acquires a degree of elasticity which no other form of woven plexus presents. A few statistical details, and a notice of a machine for making twelve stockings at once, will be found under Hosiery; while the following, from the evidence collected by the Factory Commissioners, will show the mode of conducting the stocking-trade. There are three classes of
operatives engaged: the 'winders,' who put the silk, cotton, or thread on the bobbins: the 'stockingers,' or 'frame-work' 'knitters,' who work the thread up into a knitted fabric; and the 'seamers,' who make the stockings out of the pieces of the goods. A great number of small children, who can wind thread enough for half a dozen machines each; the 'knitters' are men, women, and youths, who hire both the winders and the seamers; and the 'seamers' are women. Some of the stocking-frames are open, in which the women are worked at home, and some are closed, in which the women are worked out to the men by the owners at so much per week for each frame; while other persons are renters of what is termed a 'shop of frames,' containing eight or ten frames, let, with standing-room, &c., to the workmen. The house-keepers are generally of the latter class, paying a certain sum, usually a guinea per week, giving a workman a week to the holders of a shop of frames; and these latter charge that same sum, or perhaps three pence more, to the journeymen or real workers, with the addition of 'a piece of the shop-rent.' It is thus that such difficulties arise for the trade of knitting, and may be due to the great extent of it, and the fact that the trade is not in the hands of manufacturers.

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Pile Weaving.—If we examine a piece of silk velvet, or any kind of fustian, such as velvetee, moleskin, or doe-skin, or a Turkey or Wilton carpet, we shall find that in any or all of these fabrics the warp and weft threads are apt to be cut for further use, and the resulting surface surface in the nature of a pile, or a moulding, which adds greatly to the beauty of the fabric. In some kinds of fustians the pile is cut so as to impart a peculiarly soft and smooth texture to them. It may seem strange to class together such very different materials as silk velvet, fustian, and Turkey carpeting; but the classification is strictly correct, because all of them are examples of the same operation, and are made on the same power-loom, which is adapted to the nature of the design. But there is, besides the warp and weft properly so called, another kind of warp, whose threads are laid standing in loops above the general surface, and are cut, and the cutting of which constitutes the pile. In some kinds of fustians the pile is cut so as to give a smooth velvet surface; while in other kinds it is cut into parallel cords, forming corduroy and such like fabrics. The cutting used formerly to be done by peculiarly shaped knives held in the hand, but some very ingenious machines have been contrived for effecting it more quickly and correctly. For the application of this peculiar manufacture to different fabrics, see Carpet; Fustian; Velvet.

Power-Weaving.—In all the kinds of weaving hitherto noticed it has been a matter of very great advantage to use double cloth, bobbin-net, stockings, or velvet fabrics, we have uniformly spoken of the weaving-machine as being worked by hand, or rather by hand and foot, for a tredle is an almost invariable component part of such a machine. We may speak of the tredle as a component part of the machine, and the steam-engine as the essential element, by which the steam-engine has been brought to bear on this department of industry.

In the 'Philosophical Transactions' for 1768, a loom, invented by M. de Gennes, is described as 'a new engine to make linen cloth with the aid of an artificer, by applying water-power as the moving force.' The advantages are 'thus enumerated: 1. That one mill alone will set ten or twelve of these looms at work; 2. The cloth may be made wider in one day than any which has been hitherto made; 3. There will be fewer knots in the cloth, since the threads will not break so fast as in other looms, because the shuttle that breaks the greater part can never touch them. In short, the work will be executed faster and in their finished state, and the expense of the power of the present day; but we have no evidence that De Gennes's machine ever came into use. At various times during the last century, M. Dolignon, M. Vaucanson, Mr. Austin, and Mr. Millet contrived looms which were to be worked by water, and besides some considerable expediency, the ordinary hand-loom. A model of Mr. Austin's machine is deposited in the museum of the Society of Arts; and Mr. Porter, in his 'Treatise on the Silk Manufacture,' has given a representation and description of its mode of action. The first power-loom for weaving was very simply carried out by Mr. Austin in the factory of Mr. Monteuil, near Glasgow, in 1798; but before that time another machine had been invented, whose history is curious and interesting.

The Rev. Dr. Cartwright, brother of the late Major Cartwright, happening in 1768 to be in conversation with some gentlemen concerning Arkwright's spinning machinery. It was observed that, so soon as Arkwright's patent expired, so many mills would be erected, and so much cotton spun, that hands would not be found to weave it, and a necessity might arise for inventing a new mode of spinning. And this case, invent weaving machinery; and the idea, thus suggested by himself, seems to have taken hold of his mind; for he soon afterwards endeavoured to form a machine which should imitate the three movements of the weaving machine. He succeeded so far as to produce a machine, which he patented in 1785; and another, for which a patent was obtained in 1787. He tried to establish a power-loom weaving factory at Doncaster, but failed; Messe, Grimshaw and others employed some 100 of Mr. Cartwright's machines at work at Manchester, but similarly failed from various causes; and, after many years of labour, many patents, and an expenditure of 40,000l., Dr. Cartwright was compelled, in 1808, to ask for a grant from Parliament as a means of overcoming the difficulties of the cotton trade. Parliament awarded him 10,000l.

One cause which delayed the adoption of power-looms was the necessity for stopping the machine frequently, in order to dress the warp as it unraveled from the beam, which was the principal operation required in the hand-loom, so that there was no saving of expense. In the year 1822, Mr. Radcliffe, a cotton manufacturer of Stockport, aided by a workman, Thomas Johnson, made many contrivances with a view to remedy this inconvenience, and the inventor to whom the honour of being the first to introduce modern factories, by which the warp is dressed before it goes into the loom. At a subsequent period Mr. Horrocks and Mr. Mainland, both of Stockport, made other improvements, which brought the power-loom entirely into use for weaving operations, and thus power-looms became established. Still more recently, Mr. Roberts, of the firm of Sharp and Roberts, at Manchester, has brought the power-loom to a state of high perfection; and every year sees the number of such looms employed in manufacturing districts.

The application of the power-loom renders necessary the employment of other machines likewise, to effect those preparatory operations which, in hand-loom weaving, are carried out by the hands of the weaver. Mr. Austin called calico as the representative of plain fabrics generally, the mode of proceeding in power-loom factories may be shortly sketched as follows:—

The warping-frame instead of being employed on the same principle as the warping-mill sketched in a former page, is so arranged as to be worked by steam-power. Several bobbins, arranged with their axes parallel and horizontal, in a compartment at one end of the frame, yield the yarn which is to be collected into a warp. The bobbins, proceeding from the bobbins, pass under some rollers and over others, until all are brought into a parallel layer, a comb of fine wires being employed to separate the yarns equally. The yarns are then collected and coiled as in any other frame, and are put into the warp-frame, and transferred to the dressing-machine. This latter is a large piece of mechanism, by which the contents of eight rollers from the warping-frame are collected on one roller or beam, which is to form the warp-beam of the web. The yarns, passing through the paste or mucilage-drying, and dried. Four of the rollers are placed at one end of the machine, and four at the other; and the yarns, proceeding from thence, pass between rollers, of which the lower one is polished, and becomes thus coated with it; they are then passed under and over brushes, by which the paste is rubbed into the fibres; then over a steam-heated copper box, by which they are dried, and, lastly, are wound on the warf-beam.
two or three hundred bobbins, arranged through a comb or reed, coated with paste, rubbed with the brushes, dried over the steam-heated boxes, and wound on the warp-beam; thus combining both warping-frame and dressing-machine in one.

The preparation of the warp in the loom, comprising what are called the ‘drawing’ and ‘mounting,’ is more simple for the power-loom than for the hand-loom, but is still somewhat intricate. When however this is effected, steam-power does all the rest: it forms the shed or division of the warp into two parts; it throws the shuttle; it drives up the west with the batten; it unwinds the warp from the warp-roller; and winds the woven material on the cloth-roller. Part of these operations may be illustrated by Fig. 6, in which some of the mechanism is omitted to render the rest more clear. The warp, un

wind from the beam A, and bordering round the roller B, passes through the two leaves of healds CC, by which the shed is formed for receiving the shuttle at D; and after the weft of the batten (not here shown) the finished cloth E results.

The pressing, finishing, dressing, &c., which the woven goods receive, whether woven by the power-loom or the hand-loom, depend, of course, on the nature of the fabric. One of the most important of these, by which the plain goods become diversified with ornament, is detailed under CALICO PRINTING.

With a few remarks on the recent progress of power-weaving, we shall conclude. Mr. Baines, about eight or nine years ago, arrived at an opinion, from the estimates of Messrs. Cleland, Kennedy, Greg, Banffy, and others, that there were, at that time, 83,000 power-looms in England, and 15,000 in Scotland; and he stated that while power-looms were rapidly increasing every year, there was no proof that hand-looms had diminished. The number of the latter, at various times between 1824 and 1833, has been estimated at from two to three hundred thousand. Up to the year 1833, the weaving by power-looms was chiefly confined to calico and furnishing; but it is gradually being employed for other fabrics. There is one cotton factory at Stockport in which 1300 power-looms are employed in weaving calico; and many other factories exhibit an equal, or nearly equal, amount of operations.

What must be the ultimate effect of this system upon the fortunes of the hand-loom weavers? it is difficult to say. A boy or a girl, managing two power-looms, can produce three or four times as much cloth in a given time as the best hand-weaver; and cloth, too, which is much more uniform in its texture. The wages per piece become thus driven down step by step, and the hardly-earned pittance of the hand-loom weaver is scarcely sufficient for his support. The Parliamentary documents, published within the last ten years, comprise several large folio volumes relating wholly to inquiries made into the condition and prospects of the hand-loom weavers. In Mr. Hickson’s notes and observations on this subject, forming one of the Parliamentary reports for 1840, he gives a comparative view of the present state of the four principal classes of hand-loom weavers, and then considers the various arguments which have been brought forward in support of certain remedies for the present depression. The conclusion at which he arrives is similar to that of Mr. Baines, who, shortly before, had hailed with satisfaction the fact that many hand-loom weavers had gone to work in the steam factories: deeming it the only remedy for their present state. Mr. Hickson’s words are:—The trade of hand-loom weaving is not only incapable of improvement, but of remaining in its present state. In the years 1790, 1791, 1792, 1793, the weaver were those who would advise and assist him to transfer his labours to other channels of industry. But owing to the hand-loom, his condition will become worse from day to day. A few of the more skilled classes of weavers may indeed maintain their position, but the fate of the many (unless their intelligence and foresight avert it by change of occupation) is decreasing employment, decreasing wages, and ultimate destitution. (Reports from Commissioners, 1840, vol. i., p. 659.)

WEBB, S. W. [WEAVING.] WEBBE, SAMUEL, an eminent composer of that part-music which we may justly claim as national, was born in the year 1740. His father was a weaver, and held an office under the British government at Minorca, dying suddenly, and leaving his property in such a state that his family never profited by it; his widow was unable to give her son a liberal education, and at the age of eleven he was apprenticed to a cabinet-maker. On the completion of his term, however, he abandoned a pursuit so little suited to his expansive mind, and commenced the study of the Latin language. But his mother dying shortly after, he was reduced to the necessity of following the example of J. J. Rousseau, and copied music as a means of subsistence, though knowing but very little of the art. This led to an acquaintance with a German, named Barbandt, organist of the Bavarian chapel, who initiated him in the principles of music. His unwearying industry and patience enabled him not only to support himself by copying, but to acquire, in addition to the Latin, a knowledge of the French and Italian languages. He now began to give lessons in music, and soon after to compose, and was so successful in the latter attempt, that, at the age of twenty-six, he gained a gold prize-medal from the Cuck-Church for the best canon. In 1768 he was rewarded, by the same elegant society, by a medal for his simple but beautiful glee, ‘A generous friendship no cold medium knows,’ which immediately established his reputation.

From the year which first witnessed his success as a composer, to 1792, Mr. Webb had twenty-seven medals awarded to him by the same club, for glee, catches, canons, and odes. But it is worthy of remark, that four of his finest works, including that matchless production, ‘When winds breathe soft,’ failed in obtaining the golden honours bestowed on works of far inferior merit. And it must be confessed that some of his medals were given him for compositions now forgotten; among which too many were the reward of useless pieces of musical mechanism, called canons.
In 1814 Mr. Weber was appointed to succeed Mr. War- 
ren Horne, as secretary to the Catch-Club; and in 1879, 
on the establishment of the Gluck Club, he became a pro-
fessional member and the librarian. It was for this society 
he wrote both words and music of his popular gleé, 'Glo-
rious Apollo.' But amidst his professional avocations he 
fixed his first productions, consisting of six fugheetti, which was very favourably noticed in the German 'Musical Gazette' of that year. Shortly after this he went to Munich, where he received lessons in 
angage from the organist of the Bayerische Hofkapelle, 
and in composition from the organist of the Augustiner 
capitel, which however he candidly tells us were 'wisely 
committed to the flames.'

About the same time the art of lithography was first 
discovered, and the restless activity of the youthful 
man, which embraces with eagerness all that is novel, 
driven the young composer's attention from his legitimate 
study, and involved in him the ingenious inventor of that art. He procured 
the necessary tools, and setting himself vigorously at work, 
at length almost fancied himself the original inventor: at 
least, he says, he felt sure that he included the impreg-
nated system, and could construct more perfect machinery.

Impressed with this belief, he urged his father to remove 
to Freyburg, where all the necessary materials could be 
more readily procured. The man however quickly perceived 
the usefulness of his parents' knowledge, and annexed 
the establishment of this art, and immediately 
increased zest to his musical pursuits.

Weber now set to work on Schumann's opera, 'Das Wald-
mädchen' ('The Wood-girl'), which was performed in 1800, 
and spread further than, at his mature age, he thought 
desirable. It was, he says, a very crude jeneu work, 
though in some parts not altogether destitute of invention. 
The work was composed with a youthful affectation of promptness which he honestly 
acknowledged, and deplores. Being called to 
Salzburg, he there, in 1801, composed 'Peter Schollin.' 
in 1802 his father proceeded with him on a musical tour to 
Prag, Hamburgh, and Leipzick, and there 
work was the only thing that he could 
endeavour to do. After this, he found 
Fulhild, his second son, and 
three years after, in 1805, at 
Hildburg, he was accorded for his skill as a 
player and composer. He and his 
father lived alternately in oil, in water-colours, and in crayons. 
He likewise acquired some degree of skill in the use of 
the etching-needle, but he did not follow up these 
employments with ardour, and they were silently suffered to be 
discontinued. In the years 1807 and 1809, he 
was conscious of its influence, and at last entirely 
planted his sister as a 
father of music. His father frequently changed his 
place of residence, and this led as frequent change 
in his sons' masters, who too often undid what had been 
done. The duties of the pupil were not always more 
than compensated, by compelling him to become his own 
officer, and to depend on his own energies. He 
worked, compared, and reflected, and sought to reduce 
well-grounded principles, especially in music, from what 
he had heard, read, and thought. To Hauschel, of 
Hildburg, he was indebted for his skill as a 
flute-player; and he mentions in warm terms of gratitude the 
advantages he derived from this master during the years 
1807 and 1809.

In 1810 Weber now observing the great and decided develop-
ment of his son's musical talents, took him to Salzburg, 
and placed him under the tuition of Michael Haydn, 
brother of the illustrious composer, and himself a very 
learned musician; but though the pupil laboured with 
rareness and industry, his progress was slow and 
meagre. The master was then at an advanced period 
of life; he was grave, not to say severe, in his manner. There 
was in the tone of the distance between old age and 
childhood. At Salzburg, in 1798, his father, as an 
detachment, printed his first production, consisting of 
6 fugheetti, which was very favourably noticed in the German 'Musical Gazette' of that year. Shortly after 
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He likewise acquired some degree of skill in the use of 
the etching-needle, but he did not follow up these 
employments with ardour, and they were silently suffered to be 
discontinued. In the years 1807 and 1809, he 
was conscious of its influence, and at last entirely 
planted his sister as a 
father of music. His father frequently changed his 
place of residence, and this led as frequent change 
in his sons' masters, who too often undid what had been 
done. The duties of the pupil were not always more 
than compensated, by compelling him to become his own 
officer, and to depend on his own energies. He 
worked, compared, and reflected, and sought to reduce 
well-grounded principles, especially in music, from what 
he had heard, read, and thought. To Hauschel, of 
Hildburg, he was indebted for his skill as a 
flute-player; and he mentions in warm terms of gratitude the 
advantages he derived from this master during the years 
1807 and 1809.

In 1810 Weber now observing the great and decided develop-
ment of his son's musical talents, took him to Salzburg, 
and placed him under the tuition of Michael Haydn, 
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the first two years, nearly the whole of his attention. But his account of himself and his compositions seems to have been discontinued in 1818, and we have no means of filling up the interval between that period and 1822, in which year the first sort of, at Berlin, his present work, 'Der Freischütz,' the text, or libretto, by his friend and countryman Kind. Not only the novelty and beauty of the music, but the deep thought it evinced, immediately excited an extraordinary sensation in the north of Germany; and a copy of the manuscript has been sent to the editor of the 'Harmonicon,' an extract from it appeared, in January, 1823, in the first number of that periodical. This gentleman lost no time in mentioning the opera in strong terms to the proprietor of the English Opera-House. Judging from the expense of bringing it up, the decline of the dramatic contemporaries, has left few authentic records of his career, beyond his works. We know not where he was born nor where he was educated. The earliest notice we find of him is in the papers of Henslove, where he mentions as writing plays in conjunction with Dr. Webster, Drayton, Middleton, Stephen, and others. His works were performed by the Opera-House, and afterwards to Covent Garden, but with a similar result. However, other specimens of the work, and among them the beautiful Cavatina appearing in the 'Harmonicon,' and public attention having thus been called to it, the opera was at length performed, July 23rd, 1824, at the English Opera-House, and produced as great an effect in London as it had done in Berlin. In the following October it was given at Covent Garden theatre, and in November at Drury Lane, with the most brilliant success at both houses. On the 8th of December 'Der Freischütz,' under the title of 'Robin des Bois,' was brought out in Paris, at the Odéon, and for two weeks a most marvellous improvement on a French as on an English audience, its effect was sufficiently flattering to the composer, who nevertheless had great reason to complain of the iniquitous means by which his music had been procured, and of the imperfect manner in which it had been performed. Two of his two propositional letters to the manager of the Odéon on this subject were published in the 'Harmonicon,' vol. iv., p. 41.

In November, 1823, Weber produced at Vienna his 'Euryanthe,' which was not at first received with the enthusiasm which had followed his 'Oberon' and 'Der Freischütz.' It had, a serious, and certainly not written in a popular manner; but the more it became known, the more it was admired, and the overture is one of the composer's happiest flights of genius.

In 1825 Weber received a visit at Dresden from Mr. C. Keble, then the impresario of Covent Garden theatre, for the purpose of inviting him to compose an opera for the English stage, and to superintend its production in London, an engagement which he willingly undertook. The term of the contract was a hundred and twenty-seven representations, twenty-four of which were conducted by the composer. But it was now apparent that he was suffering under pulmonary disease. His journey to London in an unsavoury season, and his arrival in February, in the midst of the worst weather possible, aggravated his malady; nevertheless he bore up manfully against his sufferings. On the 26th of May he had a benefit concert at the Argyll Rooms; but we regret to add, says the 'Harmonicon,' and blushed for our country when we stated it to him, that the house was absolutely empty, and those who were unaccustomed to music of so original and high an order, yet they were fully felt by competent judges. The author was greater in the most cordial manner by the audience, and thoroughly satisfied with his public reception. Of the composition, which had been written in six months, and produced in three hundred academic dissertations. All his works display great research as well as learning. He was not only a good classical scholar, having had it in contemplation at one time to publish an edition of the Greek Bible, but he was also well versed in Oriental and Arabic. In his medical opinions he was a disciple of Van Helmont and Sylvius, and he adopted without enquiry the absurd opinions of these writers on the action of medicines. Amid the immense mass of his writings there is much that is valuable. His knowledge of the language and literature of the Orient was increased by the occupation of the opinions of others to have any of his own, so that his influence has been much less than many of whose writings do not amount to a tithe of that of his master. He had a large private practice, and was remarkable for the judiciousness of his manner in conversing on public matters, so much so that all his biographers express surprise at the great amount of his labours. He was held in much esteem by the men of his day. He was a member of the Leopoldine Academy, under the name of Hercules, and also a Fellow of the Royal Society of Edinburgh and
WED

many other learned societies. He was first physician to the Duke of Saxe Weimar, and also to the Elector of Mayence; and in 1604 he was created a count-palatine, and made an imperial counsellor. He was married for the third time in his sixty-third year, and had several children by this marriage. He died suddenly from disease of the heart, in the seventy-seventh year of his age. Although a voluminous writer, he was not in advance of his age in scientific acquirements. It is not therefore a matter of surprise that he was a believer in astrology, an art which he pursued with much zeal. It is too often the case in the medical profession that those who linger over the records of past experience fail to cultivate their powers of observation and reflection, and thus become the dupes of systems that have scarcely in fact a shadow or show of truth.

Wedel had several sons, who were distinguished men in the medical profession. Extent Wedel was born in 1671, and died in 1709. He followed in the footsteps of his father. He published a work on the diseases of orators, 'De Morbis Conjunctionorum,' which went through two editions. JOHANN ADOLF WEDEL was the eldest son of his father, and was born in 1695. He has also written a large number of works, the chief of them academical dissertations.

The following are some of Wedel's numerous works:—

'Dynagra,' 1674, Jenae, 4to.; 'Exercitationes Pathologicae,' 1685, Jenae, 4to.; 'De Medicamentis Facultatibus, cognoscendis et applicandis Libri Duo,' 1678, Jenae, 4to.

This work has been translated into English. 'De Medicamentorum Compositione extemporanea ad usum hodie accommodata,' 1709, Jenae.

This work is still spoken well of, and Wedel has still the reputation of having been an accomplished prescriber.

(Biographie Medicale; Jocher, Allgen. Gelehr.-Lett. Eloy, Dict. Historique de la Medecine.)

WEDEL, in Mechanics, is a prism of wood or metal whose base is a triangle: it is employed to remove two objects from one another laterally, or to rend asunder the parts of a body; an edge which is parallel to the geometric base of the prism being introduced between the body or parts of the body, and the whole wedge being then driven forward by a percussive force, as the stroke of a hammer. The nature of percussive force, and of the resistance which a yielding material opposes to the motion of the wedge, however, imperfectly known, it is usual to consider the motive-power and the resistance as simple pressures, or weights, in estimating the conditions of equilibrium when a wedge is employed as a machine.

Let ABC represent the section of a wedge perpendicularly to the mathematical axis; and for simplicity, suppose this section to be an isosceles triangle. The plane passing through AB, perpendicular to ABC and to the paper, is called the head or back of the wedge: the plane passing through AC and BC perpendicular to the paper are called the sides; and their line of section, passing through a, and b, is the edge. The motive-power is applied to the head of the wedge; and may be supposed to act in the direction MC perpendicularly to that plane, and passing through C in the edge. Let the material which is to be rend asunder be in contact with the sides of the wedge in lines passing through a and b perpendicularly to the paper; and let the two parts yield as if they were capable of turning about some point c in the direction of MC, produced if necessary: then it is evident that the effect of the wedge will be the same as if a section made perpendicular to the axis, were abc. Imagine ad, bd to be drawn perpendicularly to ac and bc; then those lines will meet at a certain point, as d, in the line MC: imagine also the parallelogram adBD of forces to be constructed; then dD for 2aD will represent the motive force, and da or db the pressure which that force exerts at a or b perpendicularly to ac and bc. Let P represent the motive force, and R the pressure at a or b; then, in a state of equilibrium, the latter will represent the reaction of the material in the direction ad or bd. But we have

\[ P : R = 2aD : da. \]

But the triangle aNd is similar to cNa; therefore

\[ dN : da : aN : ac, \]

and consequently

\[ P : R = 2aD (\equiv ab) : ac. \]

The point of the position c where the separation of the material is supposed to take place varies for different materials, and can only be estimated, or found from experiment: if it were supposed to coincide with C, we should have

\[ P : R = 2aN : aC; \]

or by similar triangles aC, ABC.

\[ P + R = AB : AC. \]

If the force of the wedge at the points a or b were to be estimated in the direction Na or N\bar{a}; as when it is required, neglecting friction, to find the force with which a given pressure P in the direction MC, on the head of the wedge, would make a body at a or b slide in a direction coinciding with C, then, R being the force, and C coinciding with C, or ad being now perpendicular to AC, we should have

\[ P : R = 2aN : Na, \]

or as 2aN to NC, or as AB to EC.

The point c still coinciding with C, let \( \theta \) represent the angle AEC, half the angle of the wedge: then

\[ aN = \sin \theta, \quad \frac{AB}{AC} = \sin \theta; \]

also AB : EC = 2 sin \theta = \cos \theta;

it follows, radius being unity, that

\[ P : R = 2 \sin \theta : 1, \quad \text{or} \quad P = 2R \sin \theta; \]

also \( P + R = \sin \theta : \cos \theta, \) or \( P = 2R \tan \theta; \)

where R and R' represent the pressures perpendicular to AC and to EC, respectively.

If it were required to find an equation for the motion of a wedge when acted upon by a force of percussion, a process corresponding to that which follows must be employed.

Let, as before, ABC be a section of the wedge, which may be supposed of iron; let it be introduced between the parts of a body which can yield only in a lateral direction: and let it be driven by a mass of iron falling upon it from a point at some given height above it. Both the wedge and the hammer, or falling body, must be understood to be elastic; and it will be convenient to represent the latter by a parallelopiped of iron whose base is equal to the rectangular head of the wedge: let the height of such solid be represented by P, and let the space through which it is supposed to fall be represented by b; then, by Dynamics, \( 2gb \) will be equal to the square of the velocity of impact. In like manner let the friction of the wedge, estimated in a direction parallel to CM, be represented by the weight of a parallelopiped of iron whose base is the rectangular head of the wedge, and let the height of such parallelopiped be represented by \( \frac{P}{Q} \).

When the collision takes place, both the falling body and the wedge will be compressed in the direction of their length. Let the linear contraction of P be represented by \( \alpha \), and that of the wedge supposed at present immovable, by \( \varphi \) (both \( \alpha \) and \( \varphi \) coinciding in direction with MC). Then \( \varphi \) represent the modulus of elasticity (or the height of a vertical column of iron, having a base equal to the head of the wedge, whose weight would, if it causes, reduce the height P or Q of the supposed masses of iron to zero) and the forces of compression be assumed proportional to the contractions which they produce, we shall have \( \frac{P}{Q} = \frac{\alpha}{\varphi} \) for the forces by which the falling body and the wedge are respectively compressed in consequence of the collision; or the forces by which
which they tend to recover their original state: let these be represented by \( mp \) and \( m q \) respectively; or, in terms of the force of gravity, by \( m g p \) and \( m g q \). Then \( n g q \) will represent the motive force by which the movement of the falling body is resisted after the impact, or \(-\frac{n g q}{P} \) will represent the retardative force against that body.

But from the equality of action and reaction we have

\[ mp = nq \]

whence \( p = \frac{nq}{m} \), and \( p + q \) or the sum of the compressions, is equal to \( \frac{n + m}{m} q \); let this be represented by \( s \); then \( q = \frac{ms}{n-m} m \) and \( P = \frac{mn_p}{n+m} m \). Now, by Dynamics, accelerative or retardative force is represented by

\[ \frac{dv}{ds} \]

and the velocity of the falling body at any time \( t \) between the instant of impact and that at which its motion is extinguished by the resistance: therefore

\[ \frac{dv}{ds} = -\frac{m n g s}{(n+m) P} \]

and integrating, \( V \) representing the velocity at the instant of impact, at which time \( s=0 \),

\[ V = V_0 - \frac{m n g s}{n+m} \]

But when the wedge begins to move, the friction is equal to the force by which the falling body is compressed; therefore, making \( Q \) equal to \( m n s \) or \( (nq) \) we have

\[ s = \frac{(n+m) Q}{mn} \]

which being substituted in the above equation, we have

\[ V = V_0 - \frac{(n+m) Q}{mn} \]

Now the wedge being uniformly resisted by friction while moving in consequence of the impact, the retardative force \( f \), expressed in times of gravity, will be \( \frac{Q}{P} \).

\[ W \]

representing the weight of the wedge in terms homologous to \( P \). Therefore since, by Dynamics, \( s = \frac{tv}{Q} \); if we represent the space through which the wedge moves in the direction \( BC \) by \( x \), we have, substituting for \( s \) and \( f \) their values, and for \( V \) putting its equivalent \( 2g h \), where \( A \) is the height due to the velocity \( V \),

\[ x = \frac{t^2 v}{2g} \frac{\sqrt{Q}}{P} \]

\[ x = \frac{t^2 v}{2g} \frac{\sqrt{Q}}{P} \]

The values of \( m \) and \( n \), that is, of \( t \) and \( v \) may be found, since \( e \), the modulus for iron, is known to be about 10,000,000 feet; and consequently the relation between \( m \) and \( q \) can be determined in numbers.

WEDGEWOOD, Josiah, was born on the 12th of July, 1730, at Burslem, in Staffordshire, where his father, Thomas Wedgwood, and some other members of his family, were engaged in the manufacture of pottery; a branch of industry then in so very imperfect a state that, independent of the supply of porcelain from China for the use of the higher classes, England imported large quantities of porcelains, and various kinds of earthenware from France, Holland, and Germany, for domestic use. His education was very limited; and the low social position of the class from which he sprung is implied, rather than distinctly expressed, by the local historian, Simon Shaw, who remarks that scarcely any person in Burslem learned more than mere reading and writing until about 1750, when some individuals endowed the free-school for instructing youth to read the Bible, write a fair hand, and know the primary rules of arithmetic. The little opportunity that Wedgwood had for self-improvement is further indicated by the circumstance stated by Shaw, that at the age of eleven years Josiah worked in his elder brother's pottery as a thrower, his father being already dead. In the small-box, which left an indelible lameness in his right leg, so as afterwards to require amputation, compelled him to relinquish the potter's wheel. After a time he left Burslem, and entered into partnership with a person named Harrison, at Stoke; and during this partnership, which was soon dissolved, his talent for the production of ornamental pottery was developed itself. He then became connected with a person named Heidleon, with whom he manufactured knife-handles in imitation of agate and tortoiseshell, melon table-plates, green pickle-leaves, and similar articles. The manufacture was developed into porcelain and other departments of the pottery business, and was unwilling to embark in the new branches for which Wedgwood had so great a predilection. Wedgwood therefore returned to Burslem in 1759, and set up for himself, in a small chamber above his factory, where he conducted his experiments, and which he afterwards made a complete table of ornaments as are mentioned above. His business was prosperous, he soon took a second manufacture, where he made white stone-ware, and a third, at which was produced the improved cream-coloured ware by which he first took notice. As a result, he found, a valuable commodity for his wares, who had worked a considerable pottery, retired from business, but he continued industrious and persevering, 'and certainly,' observes Shaw, 'there was room then for such a person, in a manufacture gradually rising into celebrity; assisted in what branches he pleased, he could, in all probability, have established a new manufacture.'

Of the new cream-coloured ware, of which an account is given under Earthenware, vol. ix., p. 243, Wedgwood presented some articles to Queen Charlotte, who thereupon ordered a complete table service, and was so much pleased with it as to appoint him her potter. Several other kinds of ware invented by Wedgwood are mentioned in the article above cited, where also is given a quotation from the 'Travels' of Faujas Saint FOND, which shows how widely the name of Wedgwood's pottery spread before the time at which the traveller wrote, about the commencement of the French revolution. Wedgwood opened a warehouse in the metropolis, at which the productions of his ingenuity might be freely inspected, and in his partner, Mr. Bentley, who managed the London business, he found a valuable and adjutor, whose extensive knowledge in many departments of literature and science, and acquaintance with many eminently skilled men, greatly assisted him in the higher branches of his manufacture, and especially in obtaining the best specimens of sculptured, painted, gilded, or charged, medals, medallions, and seals, suitable for imitation by some of the processes he had introduced. Some persons trusted to valuable sets of oriental porcelain for the like purpose; and Sir William Hamilton lent specimens of ancient art from Herculaneum, of which Wedgwood and his numerous workmen produced the most accurate and beautiful copies. While Wedgwood was prosecuting these branches of his art, the portrait or Barberini Vase was offered for sale, and, considering that many persons to whom the original was so unattainable might pay a premium for a copy at a price for a good imitation of it, he endeavoured to procure it, and for some time continued to offer an advance upon each bidding of the duchess of Portland, until at length, his motive being ascertained, he was offered the lease of the right of withdrawal of opposition, and consequently the duchess became the purchaser, at the price of eighteen hundred guineas. Shaw states that Wedgwood sold the fifty copies which he subsequently executed at fifty guineas each, but that his expenditure in producing them is said to have exceeded the amount of the sum thus obtained.

According to Allan Cunningham's ' Lives of the most eminent British Painters, Sculptors, and Architects ' (vol. iii., p. 258), Flaxman was one of the artists employed by Wedgwood to design pottery patterns, including a plate on which he depicted the Judgment of Paris, an art which he was the first, in modern times, to execute in pottery. By numerous experiments upon various kinds of clay and colouring substances, he succeeded in producing the most delicate cameos, medallions, and miniature pieces of sculpture, in which he adapted a substance which was adapted to resist all ordinary causes of destruction or injury, that they appear likely to exceed even the brooches of antiquity in durability. Another important discovery made by him was that of painting on vases and similar articles, without the glossy appearance of other porcelain or earthenware; an art which was practised by the ancient Etruscans, but which appears to have been lost since the time of Pliny. The indestructibility of some of his wares rendered them extremely valuable for the formation of chemical vessels, particularly those exposed to the influence of acids. The fame of his operations was such that his works at Burslem, and subsequently at Etruria, a village
erected by him near Newcastle-under-Lyme, and to which he entirely removed in 1771, became a point of attraction to numerous visitors from all parts of Europe.

The result of Wedgwood's invention was not only obtained for him extensive patronage and ample fortunes, but were also of the highest importance to the commercial interests of his country. Almén observes that his new wares, his improved forms and shafte style of decoration, and the new materials, should be equally applied, were chiefly executed by artists of his own forming, turned the current in this branch of commerce, while the national taste was improved, and its reputation raised in foreign countries. His inventions, says this writer, 'have prodi-
giously increased the revenue of the country, and which shew that there is a demand for potters, and in the traffic and transport of their materials from distant parts of the kingdom; and this class of manu-
ufacturers is also indebted to him for much mechanical con-
tributions, principally in the arrange-\mnent in his operations; his private ma-
ufactory having had, for thirty years and upwards, all the e\nc\ff\acy of a public work of experiment'. In evidence before a committee of the House of Commons, in 1765, Wedgwood stated that from 10,000 to 20,000 persons were the first employed in his manufacture, and much greater numbers in digging coal for their use; and in various and distant parts of England, and even Ireland, in raising and preparing flint and clay for the earthenware manufacture; 40,000 or 60,000 tons of those materials being annually imported and readily exported, which involves a considerable navigation. The importance of the manufacture which he had so materially assisted in raising to this prosperous state is further illustrated by the statement that although many of the states of Europe had prohibited the admission of British manufactures, yet the annual exports of earthenware to mineral countries, for the purpose of being manufactured into a quantity of goods, totalling five-sixths of the quantity made were exported. Wedgwood's success also led to the establishment of improved pottersies in various parts of the continent of Europe, as well as in several places in Great Britain and America.

In addition to the attention bestowed by Wedgwood upon the manufacture with which he has inseparably connected his name, he deserves remembrance for the public spirit displayed by him in the encouragement of various mechanical concerns. By his advice and skill of Bredley a navigable communication between the eastern and western coast of the island was completed, by the formation of the Trent and Mersey Canal, for which he cut the first sod on the 29th of July, 1766, and which was completed in 1770. By means of this undertaking and in water-communication was established between the pottery district of Staffordshire and the shores of Devonshire, Dorsetshire, and Kent, whence some of the materials of the manufacture were imported, and many benefits were afforded for the exportation of the finished articles. Wedgwood also planned and carried into execution a turnpike-road, ten miles in length, through the Potteries. He was the founder and one of the principal leaders of the association for the preservation of the bacon hogs, which is called by many in all parts of Great Britain, instituted in consequence of Mr. Pitt's pro-
positions, in the year 1768, for adjusting the commercial intercourse between Great Britain and Ireland; an associa-
tion by whose prompt and energetic interference most serious evils were averted from the manufacturing interests of this country, and whose proceedings upon the subse-
cquent occasion of a commercial treaty with France, pub-
ished in the Appendix to Almon's 'Aneodeses,' contain some curious information respecting British commerce and manufactures.

Wedgwood's pyrometer is fully noticed elsewhere. [Pyrometer, vol. xix., pp. 164, 165.] He was a fellow of both the Royal Society and the Society of Antiquaries, and, as noticed in the article owed to, contributed some papers to the Philosophical Transactions. In his character he is said to have been exemplary, and to have made the most liberal use of the ample means which his successful and honourable career placed at his disposal; but authorit\ty and singularly deficient in respecting his past social history. He died at Mursie, where he had erected a handsame mansion, as well as manufactories and residences for his workmen, on the 3d of January, 1795, in his fifty-fifth year.

Censure of the county of the Staffordshire Pottery, published at Hanley in 1829; 190-194; Maeperson's Annals of Commerce, iii., 381-386; Almon's Biographical, Library, and Political Anecdotes, ii., 164-174; Gentleman's Mag-
azine for January, 1735, p. 84.

WEEDON. [Northamptonshire.]

WEEDON BECK. [Now Warwickshire.]

WEEDON. Every plant which grows in a field other than that of which the seed has been sown by the husbandman is a weed, and, in as much as it interferes with the intended cultivation, and reduces the quantity of harvest, it is prohibited by law. If the husbandman permits the initial cultivation, when few seeds appear amongst the growing crops; and many of the operations of tillage are intended chiefly for their destruction. One of the principal uses of summer fallows is to destroy the weeds, which come up in the winter, and which their roots were not destroyed before the seeds ripen. When roots are sown in drills and carefully hoed, they produce the same cleansing effect, and supersede the fallow: but in heavy loams which have been neglected and overrun with weeds, a clean fallow is a farce indescribable, before any improved method can be adopted. When a farmer enters on lands which are in a foul state, it is the cheapest way, in the end, to sacrifice a crop and thoroughly purge his fields from weeds, especially those which are preci-
ous; and cannot be exterminated by simple ploughing. The mode of doing this must depend on the nature and duration of the weeds, whether their roots are perennial or die off after the plant has borne seed. Annual weeds are burned as soon as they are perfect; while weeds, which the seeds are brought within the influence of the atmosphere and when they have fairly vegetated may be buried or rooted out, and by exposing their roots to the influence of a hot sun they are effectually destroyed. The seeds of annual weeds, grown on the manure, are also destroyed, which is made in the yards, where the cattle fed on hay or straw swallow the seeds, which pass through them undigested. By exciting a great degree of fermentation in the mixture of dung and litter some of the seeds may be de-
throned, but many will remain thus protected, and even after having been exposed to a considerable heat: and, as it is not advisable to let the manure undergo a great degree of decomposition before it is carried on the land, many seeds always escape destruction, and vegetate as barny as they are buried in the yard, which are buried deep lie dormant for a long time, and vegetate as soon as the plough brings them up again.

The experienced farmer knows well what peculiar species of weeds infest his fields, according to the temperature and order of the three seasons, and by studying their habits, time of flowering and of ripening their seed, he learns the best mode of destroying them.

One of the great advantages of composts made with human excrements mixed with earth and mineral sub-
stances is, that they introduce no weeds into the soil. It is reported that in China, where the dung of cattle is little used, in comparison with human excrements, no weeds are to be found in the fields: and if more attention were paid to the preservation of human excrements by feeding cattle and horses, that the ploughs, which are buried deep lie dormant for a long time, and vegetate as soon as the plough brings them up again. Feeding sheep on roots and corn, while they are folded on the land, is another mode of manuring a field, without introducing weeds, especially if no hay is given them, except clover-hay of the second crop, which is generally most free from the seeds of weeds. It would be impossible to enumerate all the various weeds which may infest our fields. This would be giving a flora of all the British woods; but we will state the most common and troublesome to the farmer, with such an account of each as may suggest the most ready means of destruction.

Of the annual weeds we may mention the following noticed by Professor Low in his elements of practical agri-
culture.

Sinapis arvensis, or Wild Mustard, usually called char-
lock, is a weed the seeds of which being of an oily nature will remain dormant in the soil for an indefinite time, if buried and covered with surface-soil; but after the first deepening their ploughings, which otherwise would be very advantageous, because they have found that, in some soils, a ploughing beyond six inches deep will cause the crop to be overrun with charlock so as to choke it out, and to bring about the competition, and an outlay, which will be well repaid in the end, to destroy this enemy. Hoed crops will destroy the plants as they come.
up. Winter tares may be cut before the charlock
perfects its seeds, will help to destroy it, and if they are
succeeded by turnips there will be little charlock left in
autumn. Where it appears and the yellow flowers it
must be pulled out, whatever be the cost, and care
must be taken to carry the plants out of the field to burn or
rot them; for the seeds will vegetate when they are but half
ripe in the pods. We have dwelt at length on this weed,
because it is so troublesome. We may lose most of our best soils,
and which must be eradicated before the land can be properly
cultivated.

Somewhat allied to the last is the wild radish, Raphanus
rospertus, which is also called charlock,—the mode of
destruction is the same.

Papaver Rhoeas, or Corn-Poppies, infects some soils in
particular seasons. If the seed is allowed to ripen and
shovel it will increase rapidly: good tillage however soon
destroy them;: clover and rape which are cut while the poppy
is in flower generally eradicate it. In some seasons it will
appear in great profusion, and in others not a plant will be
seen.

Cleavers Cymenus, or Blue-Button, is seldom found in
any quantity, except where there is a slovenly culture, or
two white crops are taken in succession, a practice which,
it is hoped, will soon be obsolete.

Chrysanthemum segetum, Corn-Marigold, infects some
soils with a sprinkling of seed each season; where the
wheat is drilled, this is a difficult task.

Pyrethrum inodorum, Corn-Feverfew, often called
Mayweed, as is the wild chamomile, often infects the
crops of corn, and with every care it is seen somewhere in
the fields. We have observed generally, that where the corn is reaped by the sickle and a
long stubble is left, the seeds of weeds remain on the land,
and although some of them are eaten by birds, yet
many are ploughed in after the stubble has been raked off
again. But if the crop is mown or cut close to the
ground, which is called mowing or bagging it, all
the weeds are tied up with the corn and go into the barn or
stack: and if care be taken in the winnowing and sifting
of the grain to separate the smaller seeds from the straw
and bran, the latter which often will be clean and
strong and of the cattle will contain no seeds of weeds. This
is by far the best mode of proceeding; and by careful hoeing
and weeding and burning the small seeds, the land may be
kept tolerably free from seed-weeds.

The Bow-Thistle, Sonchus oleraceus, often raises its
head above the corn. The seeds are blown about by the
winds, and if the hedges and headlands are not kept clear of
these, they will sow themselves in all directions; but it is
evitable, and easily controlled by the hand, and by middling
its flower expands. To destroy thistles in general, it is
only necessary to cut them down just as the flower is
expanding; the roots will then die, and in a few years, by
the united attention of the farmers in a district, thistles may
eventually be destroyed. In some places, where they are
employed in pulling up all the thistles in the hedges
which border the roads, and wherever they make their
appearance in the highways and lanes of a parish. This
practice cannot be too generally recommended, for the
hedges and ditches on the sides of roads and lanes are
often perfect nurseries of weeds.

Arctium Lappa (Burdock), is a very common weed in
fields; but with a little care it is easily extirpated.

Tansy, or Corn-Tansy, is a very injurious
weed, because its seeds ripen about the time of the
harvest, and from its size cannot be easily separated from the
corn by sifting; it contains a paria which is oily and when
ground with the corn greatly deteriorates the flour. The
ordinary action of lime on the crops and early hoeing them is the best means of destroying this
weed; as soon as the crop gets above the chickweed, it is
soon destroyed, if the latter covers the ground well. It
often does harm to young clover, but the latter soon
overpowers it. Tares another important weed. The same
precautions are applicable to the Spergula arvensis, or Corn-
Spurrey, a larger variety of which however is cultivated
as excellent food for milk cows.

Galium aparine, or Goose-Grass, also called Cleavers,
is a weed which is dispersed by the seeds attaching
themselves to the wool of sheep by means of hooks with
which they are provided. The thorns thus附着 is seldom
if they are not carefully pulled up and the heads cleaved of
them.

Urtica urens, Stinging Nettles, generally grow where
the ground has been strongly manured, especially when
been dung has been laid on immediately after the
stroke and are easily eradicated by repeatedly ploughing, and
insect gardens more than fields.

Polygonum Convulvulus, Climbing Buckwheat, is a
very troublesome weed, which makes the ground round the
corn and often overtops them. The seeds are said to
be nutritious and not to injure the oats when mixed with
them; but in wheat it is very destructive, and diminishes
the product while it injures the quality of the corn.

All the charming grasses are weeds. In some cases, and
in the alternate husbandry are introduced in the regular
cultivation. When the grass is ploughed up, if the seeds are
not covered sufficiently so as to rot, tufts of grass remain
which greatly increase to the injury of the next crop.
However carefully the land may be ploughed, if it be sown
immediately, the roots of grass will be raised to the surface
by the harrows. The only remedy is to have them care-
fully forked out, and carried to some corner or waste ap
loft, or to burn them during ploughing or harrowing.
When the land is ploughed up before winter and the seed
sown in spring, the grass will be rotten and have lost its
vegetative power.

The Bearded Wild Oat, Avena fatua, is a very trouble-
some weed, especially in corn fields. The truth of the
out is quantity: but this can only be the case with very slovenly
farmers. It ripens sooner than the corn and sheds its seeds
before harvest. Crops cut green for fodder, such as rye,
winter barley, and tares, repeated if necessary, soon destroy
the seeds and make it easy to eradicate them.

These are some of the most common annual and
biennial weeds. They may all be easily destroyed by weeding
at the time when they have pushed up their seed-stems
and the flower is about to expand; if they are cut up at
the time when they are clean and young, unless the weather be dry enough to scorch the
roots exposed, often increase them instead of killing them.
But the last-mentioned weeds are easily got rid of in
comparison with those which come after the corn, and
some of which increase the faster the more the roots are
divided. It may be proper to observe that too little
attention is paid to the weeds in our upland meadows
and pastures. One would imagine that every plant which
appears in the meadow is injurious. When young, unless
or when the weather be dry enough to scorch the
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attention is paid to the weeds in our upland meadows
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appears in the meadow is injurious. When young, unless
some weeds are used by the cows, the cattle may be very injurious
in the meadows; and even in mountain meadows, where the
grass is wholesome for cattle, whereas many are detri-
mental when they are eaten for want of better food. Of
this kind are the ranunculus, commonly called butter-cups,
which, far from deserving this name, are never touched by
the cows. The butter-cups pluck some parts of the grass,
but the roots of these weeds are all hidden in the
soil, and the length of ascribing to the butter-cups the power
of causing epidemic diseases in cattle, and even in
people who eat of the milk and butter of cows who have eaten
them, there is no doubt that where the cows are forced
by hunger to eat many of them, they may be very injurious
to their health and to the production of good milk. As these
plants have strong perennial roots, they take possession
of rich moist soils to the exclusion of good grasses.
But the abundant the plants may be killed off in
autumn, the experience will be well
repaids in the quality of the hay or pasture. Where
they are very abundant the only remedy is to break up the
grass in autumn, let it be exposed to the frost in winter,
and the crop of corn next season, and the grass will
be grown up the after. In the succeeding spring the land may be
inoculated with good tufts of grass, and before the next
year an improved pasture will have been formed: or, if
this is too much trouble, it may be summer-followed and
by the turnip or barley. As already mention above, the crop of the
it is expensive, as a whole year's produce is lost, but the sub-
sequent pasture will be so much better, that the expense
may be considered as a profitable investment. The most
common species of butter-cup are the Ranunculus arcti,
R. acris, and R. ficaria. R. arcti is poisonous; but not common, except in marshy pastures.
Sanecio Jacobaeus, or Rag Wort, is another troublesome
weeds: but as sheep eat it readily when young, it is easily
kept down by pasturing and folding. In moist weather also it is easily pulled up by hand.

**Tussilago farfara**, Coltsfoot. By its large leaves it kills the finer grasses under it, as moisture is essential to its luxuriance, drainage tends to diminish its growth, careful manures also make the grasses get the better of it, and choke it when young.

**Chrysanthemum Leucanthemum**, or Great White One Eye, sometimes abounds in inferior pastures, and is only extirpated by pulling the plants up by the roots and burning them. It is differing the height of man and beast, and may both be eradicated, but the means employed to get rid of the clover grass will work against the growth and most other perennial roots. These troublesome weeds may have been wisely dispersed through the soil by Providence, to induce the cultivator to give his land a more thorough cultivation, but without the expense of forking, and what is usually called couching, is generally simply repaid by the finer tillth it gives to the land, and the crops are more certain and abundant in consequence.

There are many other weeds both in arable and pasture land which indicate slovenly culture, and which disappear on careful cultivation: such are briars, furze, broom, and rushes; the last being a well-known sign of superabundant moisture, and only to be destroyed by under-draining. The introduction of the thistle is to be deprecated, but the means employed to get rid of the clover grass will work against the growth and most other perennial roots. These troublesome weeds may have been wisely dispersed through the soil by Providence, to induce the cultivator to give his land a more thorough cultivation, but without the expense of forking, and what is usually called couching, is generally simply repaid by the finer tillth it gives to the land, and the crops are more certain and abundant in consequence.

**Week** This well-known period of seven days, now universally adopted over the Christian and Mohammedan world, appears to be of Hebrew or Chaldian origin. It is so described as a measure of time, which was the period of the world, according to the Mosaic account, in that space of time; but it is besides the most obvious and convenient division of the lunar or natural month; and it is more nearly short than any other period would be, an aliquot part of the solar year of 365 days; so that its commodiousness in these two ways would seem to have been sufficient to recommend its adoption.

**Dion Cassius** attributes the invention of the week to the Egyptians, from whom he seems to say it was borrowed in later times by the Greeks and other nations (Hist. Rom., xxxvii. 18, 19, and the note in Reimar's edition).

The assertion which is sometimes made, that according to Herodotus the Egyptians had a week of seven days, or any other number of days, is a mistake. He simply says (Hist. 82) that the Egyptians invented the month, and assigned each day to some deity. It is certain that the week was unknown to the Greeks of the classical ages, and also to the Romans, till it was gradually adopted, along with Christianity, under the later emperors. The curious passage we have referred to in Dion Cassius is the source of all that is known as to the origin of the names that have been given to the days of the week. This female heathenism, which dates its origin from the time when the earth was separated from the firmament, is in this order: Jupiter, Mars, the Sun, Venus, Mercury, the Moon, the Earth (being the most distant); and it was a primitive and ancient astrology that these planets presented the symbols of the respective hours of the day. Thus to the first hour be assigned Saturn, it will be 25th (or first hour of the second day) 7th (or first hour of the first day) 14th (or first of the fourth day) to Mars; the 49th (or first of the third day) 28th (or first hour of the second week) 119th (or first hour of the seventh day) to Jupiter; and the 140th (or...
to Venus. 

**Dias Saturni** (the day of Saturn), **Dias Solis** (the day of the Sun), &c., are, accordingly the Latin designations of the days for which the positions giving to the day of the week, and from these have been formed the modern names used in different countries, either by literal translation (in the Italian, Spanish, French, and other languages of the Latin stock) or by shortening, as, in a few cases, for the classical god of the corresponding deity of northern paganism. Thus the deity of the Old Saxons most resembling Mars being held to be Tiw, or Thu, the day of Mars was called by them, after their conversion to Christianity, **Twee dag**; whereas our Tuesday and probably also the modern German Dienstag; for a similar reason the day of Mercury received the name of Wodnes dag (that is, Woden's day), whence our Wednesday (and the old German Odinstag, for which Mittwoche, Mid-week, is used); the day of Jupiter, **Donnes dag**, or Thor's day (whence our Thursday, and the modern German Donnerstag); and the day of Venus, **Frige dag**, or Friga's day (whence our Friday).

Dion Cassius however further states that the planetary names, as they were denominated, the names of the days of the week have thus been derived is itself founded upon the doctrine of musical intervals. A highly curious exposition of this idea has been given by the Abbé Roussier, in a Memoir on the Music of the Antients, printed in the *Monthly Magazine* for November and December, 1770, and August, 1771.

It is a remarkable fact that the week of seven days is not only a recognised space of time in the ancient Brahminical astronomy, but that the days (beginning with Saturn's brightest star being its sun) are correspondingly named as to correspond to the seven planets or gods, in order of course from the most distant to the nearest. There are only a few instances of the month of Venus, and in succession after the same planets or heavenly bodies as among the Greeks and Latins. Upon this subject see Baily's *Astronomie Indienne et Orientale*, and various papers by Mr. Colebrooke and others in the * Asiatic Researches*. The subject of the week in also discussed by Bohlen, *Das Alte Indien*, ii. 214.

**WEEVinX, JAN BAPTIST**, called 'the Old,' a distinguished Dutch painter, who excelled in almost every department of his art—his portraits, animal pieces, landscape, and marine painting. He was the son of Jan Weeninx, an architect of Amsterdam, where he was born in 1624, but lost his father when very young. He was first apprenticed by his mother to a bookseller, but he so professedly neglected everything except drawing, that his mother placed him first with a painter of the name of Jan Micker, and then with Abraham Bloemaart at Utrecht, with whom he soon made great progress: he studied afterwards two years with Nicolas Molenaer, and acquired his style of painting from him. At the end of eighteen months, married the daughter of the landscape-painter Giles Hendekoker, the grandfather of Melchior Hendekoker. Four years after his marriage he went alone to Rome, intending to remain only a short time there; but his own inclination, strengthened by his reception into the cardinal's family, and others, prolonged his stay there four years, when he was compelled by the importunities of his wife and friends to return to Holland. He died at Utrecht in 1660, aged only thirty-nine. Weeninx painted in large and square openings, and in his execution. In a single summer's day he painted three half-length portraits of the size of life, with accessories. Some of his small pictures are very highly finished, but his large works have more merit. He was one of the best painters of birds of the Dutch school. Weeninx's principal pieces of great merit by Weeninx, the Prodigal Son, commonly called *T Pissend Jongertje*; it has been engraved in mezzotint by N. Verkolje. There is a clever etching of Weeninx's Houboken's work, after a portrait by Batt. vander Heel.

**WEEVinX, JAN**, called 'the Young,' was the son and pupil of Jan Baptista Weeninx, and painted in the same style and the same subjects as his father, whom however he leaves behind him nothing of the best painting and sporting pieces, and also surpasses in colouring. He was born at Amsterdam in 1646, and after spending some years in the service of the elector John William of the Pfalz, he returned to his native place, and died there in 1710. Jan Weeninx painted likewise in China, and, like his brother, with great care. There are many excellent large pictures by him of birds and hunting-scenes in the gallery at Schiessenheim near Munich. (Houboken; Descamps.)

**WEwvil** is the name popularly applied in England to the beetles which resemble *Colesuilo* or Limmexus, now the type of a large family of coleopterous insects, distinguished by the prolongation of the head so as to form a sort of snout or proboscis. The weevils are favourites with the entomologist on account of the singular character of the head, and their parasitic habits. One splendid diamond beetle, the wing-cases of which furnish such gorgeous microscopic objects, is a member of the tribe. Many of them are adorned with the most vivid metallic lustre, and some in intensity and brightness of hue equal the beetles of the Orient. Weevil larvae often perpetrating serious mischief. Their natural history therefore has been made an object of special researches in the hope of counteracting their ravages. We shall here give some account of the numerous species.

**Weevile attacking the nutritive organs of plants.**

The *Rhynchos Betula* is a little blue or green beetle, glistened with metallic lustre, which attacks the vine and the pear-tree. It is four lines in length, one-third of which is occupied by its snout, and is able to disfigure and dismagnis the male from the female. It attacks the leaves of the plants mentioned, in order to construct its habitation of them, and with a view to their furnishing food for its young. It rolls up the leaf into a tube, and in this the eggs are placed. When the tubes are hatched, the nest is afterwards supplied by the larve with food. As the maggot grows, the rolled leaf and its stalk dry up, and at length fall to the ground on the first high wind, by which time the maggot is fully grown and ready to leave its house, bury itself in the ground and wait for the spring, when it is to appear in a new garb as a weevil.

The process by which the roll is made is thus described by KOLLAUR: 'When the female has selected a suitable leaf, which may not be of any particular kind, so that it hangs down and is more conveniently placed for future proceedings. She then begins to roll the leaf together, generally alone, but sometimes assisted by the male. While this operation is going forward, she also lays her eggs, that is, she picks up through the opening, and pushes it in with her rostrum, in such a manner that it remains on the inner side of the leaf. When she has introduced five or six eggs in this manner, between the different folds, she rolls the remaining part of the leaf enclosed, so that the maggot shall have room to extend and roll up. The egg is then shown to have an outward appearance, in what manner the eggs were deposited.' This beetle is externally injurious to vineyards by defoliating the vine, after which the grapes will not ripen, and the prospect of a vintage is destroyed. The rolled-up leaf is commonly considered to be the caterpillar, which is destroyed before the worms have time to arrive at maturity. Its operations are often erroneously ascribed to *Rhynchos Batitus*. The *Olitorhynchus salicatus* is another beetle which is injurious to the vine by gnawing off the young shoots. It also attacks the roots of succulent plants.

**Neuocoris oblongus** is a little weevil only two lines long, with a very short beak, a black head, body, and thorax, and reddish antennae, feet, and wing-cases. It attacks the young leaves of young fruit-trees, above all those of the peach. Its larva is as large as a nut, and, being most voraciously, it selects only the delicate portions of the leaf, the cellular parenchyma, leaving the midrib and petiole untouched. It appears very early in spring, and after pairing the female deposits her eggs in the ground, the grub feeding on the roots of various plants until the following spring. When these insects are on the trees, they must be gathered with the hand.

There is a very small species of *Rhynchos*, the *R. alliaceus*, a line or two long, very small, and of a blue or green colour, by which, injuring the shoots of young trees and fine grafts, is a source of great annoyance to the planters, sometimes perpetrating great ravages in nurseries, without distinction as to the kind of trees. The principal subject of all his subsequent account of the operations of this insect is extracted from KOLLAUR:

'When the shoot of the tree or graft is about a span long, the female selects one that suits her, and it does not signify...'

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to what kind of fruit-tree it may belong. As soon as she has reached the most suitable part of the shoot, she marks the place first by a prick or by a small cut, where she intends to cut off the bud. Thus the weevil then proceeds along a line upwards, and begins (with her head turned downwards) on the side which is not next the tree, to bore with her proboscis until she reaches the middle of the shoot. With it she also widens the channel and prepares for herself other entrances. Then, when the insect is certain, it lays an egg, which is pushed in by the proboscis and conveyed to the proper place. This operation lasts an hour. Immediately after the female returns to the former place, to cut off the shoot, moving it from one side to the other while she works, she immediately proceeds to destroy the finest apple-blossoms to be the candles of its offspring. It bores a hole in them with its proboscis, making a canal even to the parts of fructification; then laying its eggs at the circumference, it turns the bud and pushes it in with its snout as far as it can. This operation it repeats for every egg. The eggs lay, walking from blossom to blossom, choosing the finest and calmest days for its labours. Nothing but gathering the beetles and destroying the affected flowers will arrest their progress; and by doing so we may diminish their number, though, it is to be feared, hopes of their extirpation are vain.

There is another weevil of the same genus, the Antho-
nomus petri, very similar in appearance, which destroys both blossom and leaf-buds of the pear, and which, when not too numerous, may even increase the crop by preventing an overweight of fruit. The ascent of both these beetles up the trunks of the trees may be impeded by circles of papers covered with tar.

The beetle is destroyed by a weevil called Rhynchites curvipes, which sometimes also makes use of the soft spring shoots of plum and apricot trees. The female beetle attacks the plums when they are about the size of almonds. She has two objects in view: first, to destroy the trees, and secondly, the eggs-laying operation is completed she severs the stalk altogether; the joint operations occupy from two to three hours. It takes the grub five or six weeks to devour the pulp of the plum. If left undisturbed, the beetle never leaves the tree until it has pierced and thrown down every plum it can find. The only remedy or preventative of its destructive industry is to gather and destroy the affected branches, which can be easily done on the apple by another species of Rhynchites, R. Bacchus, the hue of which is beautiful purple and gold.

In the first volume of the 'Transactions' of the Entomo-
logical Society, Mr. Curtis describes a weevil called the Calandra tamariindi, which destroys tamarind stones. There are sometimes thirty or forty of these weevils in a single stone. He was led to seek for them from finding that the stones of tamarinds sometimes crumbled to pieces beneath the mouth. In the course of his inquiries, he observed that the affected stones were coated on the apple by another species of Rhynchites, R. Bacchus, the hue of which is beautiful purple and gold.

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States, towards the beginning of the last century, the cultivation of peas was abandoned in consequence of its ravages.

Tacitus, On Insects injurious to Farmers; Agricultural Journal; and the works cited.)

WEHRGELD, or WEHR (in Latin 'Wergeldum,' and in some cases 'Composition'), was a kind of fine for manslaughter, wounds, &c. in use among the ancient Teutonic nations, by paying which the offender was absolved from every further obligation or punishment. The punishment of death was almost unknown among the Teutonic nations, and was never inflicted for crimes against individuals, but only for crimes and misdemeanours by which the community was injured. Tacitus observed, that traitors and deserters were hanged on trees, and that cowards and such as were of infamous lives (corporre infames) were mangled in marshes; hurdles were thrown over them, by which their bodies were beaten to death. Several bodies of Germans, who were buried in that way, with the hurdles still over them, have been found in the great marshes of Northern Germany. It is very likely that death inflicted for such crimes was 'less a punishment than a means of getting the wehrgelde for the community, and for whom there were no prisons. Crimes committed by one individual against another were considered not directly to concern the community. The wounded man, or the relations of him who had been slain, pursued and hanged on trees if they found them guilty for satisfying their vengeance by giving them a certain number of cattle and arms. (Tacitus, Bk. 21.) If the parties belonged to different communities, the consequence was a feud between them and their adherents, no community having the alms of kindred. In another case the parishes belonged to the same community, the matter was soon settled. The plaintiff called the offender before the community, and if the defendant was found guilty, he was sentenced to pay a certain fine, the wehrgelde. If the defendant would not or could not pay, his relations were bound to pay for him; the father paid for his children, the master for his serfs, and he who received a stranger in his house was liable for the misconduct of his guest. The plaintiff was entitled to recover the fine paid by the offender before the meeting: he could pursue his cause with his sword, and thus compel the defendant to pay the wehrgelde, which was always proportionate to the offence. If the cause was brought before the community, the plaintiff only received part of the fine, the rest being considered as a fine for the breach of peace, and the consequence of the reciprocal obligation of the members of the community to mutual aid.

We learn from the written laws of the Teutonic nations that the wehrgelde was for various crimes and misdemeanours, such as murder, manslaughter, inflicting of wounds, and grievous bodily harm, robbery, theft, incendiarism, plundering, forgery, and other crimes against the person, and others, such as the violation of a grave (Lex Salica, tit. xvii.), by which is understood not only the injury done to the tomb, such as taking the tombstone from one grave and putting it upon another, but also slaying a dead body, or its clothes and ornaments. The general Latin name for the fine paid for such crimes is 'compositio;' wehrgelde designating merely the fine for a crime committed against the person of a freeman. The amount of the fine was in proportion to the crime, the loss of an arm, for instance, being proportionate to the loss of the hand. The murderer, or person who caused the death of the person, was guilty of a heavegelde, which was paid by the relative of the dead in proportion to the damage and the harm caused. The punishment of death was ordered if the murderer, or person who killed, would not or could not pay the fine.

The following is a short view of the system of the wehr- gelde according to the 'Lex Salica,' which is one of the most important of the ancient Teutonic laws: the change in the order of the titles has been made for obvious reasons.

Tit. xlvii., De Homicidio in Compositio:—He who kills a Frank, or a barbarian entitled to the benefit of the Salic Law, pays 8 denarii, or 200 solidi. If he has thrown him into a well or drowned him in water, 24 denarii, or 600 solidi. If he has lived with him under the same roof 24 denarii, or 600 solidi. If he has taken his property 40 denarii, or 1000 solidi. If he has beaten him, 800 solidi. If he has driven him out of his house, is 600 solidi; if he is murderer, 1200 solidi, with a heavegelde of 200 solidi. If there are several murderers, each pays the same fine, and each is responsible for the other. Tit. xlv., De Homicidio in Convito factis:—If there are less than seven persons present, they must either name the culprit or pay collectively the wehrgelde; if there are more than seven, inquiry is made, and the culprit alone pays, if he is detected. Tit. xxxvii., De Homicidio Servorum vel Ancilariarum:—If one servile or a master agrees upon the wehrgelde the serfs are subject to corporal chastisement. If the servant is a freedman, the master only pays the defunct. Tit. xxxv., De Poenis, He who has attacked a freeman, but failed, pays 62 solidi: for beating a man on his head, if blood comes and drops on the ground, 15 solidi; for a wound in the head, if three (pieces of) bones come out, 30 solidi; if the brain is laid open and three bones come out, 45 solidi; for a wound between the ribs, if the entrails are touched, 30 solidi; if such a wound will not heal, but keeps open and runs, 62 solidi, and 9 solidi for the doctor; for a slight wound without running blood, 3 solidi; if the blood runs, and the wound is made with an iron instrument, 15 solidi. If the wound runs, 9 solidi. Tit. xxxii., De Dilettatis:—For a foot, an eye, an ear, or the nose, 100 solidi; for a tooth, 15 solidi; for one finger, 62 solidi; for another finger, 3 solidi; for a hare, 6 solidi; he who calls another honest woman a prostitute, pays 45 solidi. Tit. xxvii., De co qui Multari Ingenium Manum strixerit:—He who ties a person's hands, or wounds them, pays 15 solidi; if he puts his foot on the back of a run-wounded man, above the elbow, 35 solidi; if he takes his bosom, he pays 45 solidi, which is the same fine paid for a wound made in a man's head, if the brains are laid open, and three bones come out.

The wehrgelde was not the same among the different Teutonic tribes, as may be seen by a comparison of their laws, the editions of which are given in the history of the Teutonic nations. The laws of the Anglo-Saxons differ in part from the others. (Eichhorn, Deutsche Staats und Reiche Geschichte.)

WEIDLER, JOHANN FRIEDRICH, born at Gross-Neuhausen in Thuringia, April 23, 1691, died at Wittenberg, November 30, 1755. He succeeded Wolff in the chair of mathematics, and was the latter's pupil. There was a number of works, of some of which the bare mention will be sufficient: as, 'Institutiones Mathematicae,' 2 vol., 8vo., Wittenberg, 1718, printed five times at least; 'De Characteribus Numerorum Vulgaribus,' 4to., Wittenberg, 1755; 'Tractatus de Machinis Hydraulicus,' 4to., Wittenberg, 1723 and 1733; 'Institutiones Geometrarum Subtissimae,' Wittenberg, 1751, 2nd ed.); 'Institutiones Astronomicae,' 4to., Wittenberg, 1754.

The works of Weidler is now preserved by two useful works, the 'Historia Astronomica,' 4to., Wittenberg, 1711, and the Bibliographia Astronomica,' 4to., Wittenberg, 1735, of which the latter also contains supplements to the former, and 'Anacreon in the history of Astronomy, was, at the time it was published, the most regular, most authentic, and complete history of a single science which had ever been published; it is to this day a very convenient book of reference, and the more so as it rather should be called the annals of astronomy than the history of the science. The whole work was taken entire by Lalande into his 'Bibliographia Astronomica,' by which work it is therefore supplanted, except for the supplements.

WEIGHING-MACHINE, is any contrivance by which the weight of an object may be ascertained; under the words Balance, Spring-Balance, and Steelyard, the machines by which materials of comparatively small magnitude are weighed are explained; and we have now merely to describe that which is employed usually at the public weights for weighing large weights of produce, like weights of laden carriages. In order to prevent the roads from being too much cut up, the buttens allowed to be
The usual weighing-machine may be described in a general way, as a platform sunk on a level with the road, and made to rest at four points on a double lever of the second kind: the extremities of the arms of these levers rest upon a third lever, which may be of the first or second kind; and this last lever may either serve as a steelyard, or may be connected with one arm of an ordinary balance, or with the extremity of a steelyard.

But to be more particular, let ABCD be the plan of a rectangular pit sunk in the ground, from 8 to 12 feet long, 4 feet broad, and about 2 feet deep, the sides and bottom being lined with brick-work or iron; and let MNRS represent a longitudinal section of the pit perpendicularly to the ground. abed, c'd'e'f are two trapezoidal frames of iron, set as levers; and each of the side bars, as ac or bd, has in the vertical position, the form which is represented by a, a', c', c" in the section. At each extremity a, b, a', b', in the plane, the frames have a conical steel point which appears at a, a' in the section; this rests in a hemispherical cavity made in a die or cylinder of the same metal, which is either attached to the iron-work forming the sides of the pit or is supported on a block of stone sunk in the ground at each of the four interior angles; and under the shoulder of the point of each frame there is a weight of tempered steel having its edge parallel to that side. The ends of these prisms appear at c and c' in the section.

The bar PQ is an iron lever, which in the above diagram is of the second kind, having at P a pin mn, like that of a balance, turning in two steel rings on a pillar of stone sunk in the ground, or of iron resting on the bottom of the box; a steel pin pq formed also like that of a balance, with its edge upwards, passes through the bar PQ; and upon this rest the edges of the prisms at c and c' as shown in the section.

The platform supporting the carriage which is to be weighed, and which is represented at MN in the section, lies below in four iron-feet, of which two appear at X and Y; and the under surfaces of these feet are formed with hemispherical cavities which rest on the points of four conical steel pins at l, m, l', m', on the two lever-frames; consequently the weight on the platform pressing at these four points, the prisms at c, c' are forced down upon the pin pq, and this last then presses down the extremity Q of the lever PQ. This lever itself may be made to act as a steelyard; or, by a rod or chain, the extremity Q may be connected with one arm of a balance or steelyard above the platform, in either case the weight of the carriage may be ascertained.

It is evident, from the nature of the lever, the pressure of the platform itself being balanced by a constant weight at Q, that if W represent the weight of the carriage, the lever PQ will express the weight of Q, or the weight by which that of the carriage is determined: and this is independent of the power obtained by a steelyard which P. C. No. 1704.

\[
\text{If } at = \frac{1}{14} \quad \text{and } Pr = \frac{1}{18}, \quad \text{a weight equal to 10 pounds at } Q \text{ would balance a weight equal to 1 ton upon the platform.}
\]

It is nothing to say on the feeling of weight after what has been said in Pressure; nor is it possible to give any idea which will be half so good as that which presents itself in reality. The measure of weight is weight itself [Balance], and two weights are equal which counterpoise each other when placed at the ends of equal arms of a self-poising lever.

The weight of a body, that is, of a given bulk of known substance, is referred to that of water by what is called the Specific Gravity of the substance. It is said, for example, that the specific gravity of ivory is 1826, that of water is 1000. This means that any body is more weight than the same bulk of water in the proportion of 1826 to 1000. When the specific gravity of water is called 1, that of ivory is 1826. Since a thousand ounces avoirdupois of water are nearly a cubic foot, a more popular notion of the meaning of specific gravity may be given, in this way: To say that the specific gravity of a substance is 1826, that of water being 1, is to say that a cubic foot of it weighs 1826 x 1000, or 1826 ounces nearly. More correctly, from 1000 times the specific gravity (water being 1), subtract three times that of gravity, and add its 73rd part: the last step may be left out for common purposes. Thus, the specific gravity being 4.817, 4.817 x 1000 — 4.817 x 3 is 4922.548, the number of ounces in a cubic foot.

But it is to be remembered, when weight is to be very accurately taken, that every body is buoyed up to a certain extent by the air; and the weight of a body in air is less than it would be in a vacuum by the weight of its own bulk of air. Now the latter varies in weight [Aur] in a manner which may be ascertained nearly by the indications of the barometer. Properly speaking, it varies in a manner depending upon the superincumbent pressure, the temperature, and the quantity of moisture contained in it. A cubic foot of dry air, weighing at sea-level 14.7 pounds, is reduced to 30 inches and Fahrenheit's thermometer at 62°, weigh 31.012 grams. In measuring standards of weight, therefore, close attention must be paid to the state of the air at the time of weighing and to the substance weighed. If an iron weight balances one in the air, then in the vacuum of the atmosphere, for that very reason there cannot be strict equilibrium in any other state of the atmosphere; wood being at least seven times as bulky as iron, the effect produced on the weight of the wood by the alteration of the state of the air is at least seven times as much as that produced on the iron.

WEIGHT OF THE AIR. (Aur.)

WEIGHT OF THE EARTH. This is not the most appropriate name for the body below us, except in the particular, namely, that the position of the letter W has enabled us to await the completion of the experiments which have been lately made for the determination of the mean density of the earth.

The quantity of matter which the earth contains must ultimately be our only guide to that of any other planet. The relative masses of two planets can be found by calculation of the effects which they produce upon any third body; but the mass of a planet with a given substance, as water, cannot be directly determined upon any instance except our own earth. Perhaps a problem could hardly be proposed which would seem more impracticable to the ordinary reader than that of determining the mean density of the earth. It amounts to asking this: If it were required to substitute for the earth a world of the same size, but of uniform material, in such a manner that the absolute weight of bodies on its surface should remain the same, and the attraction of the whole planets remains the same, what would be the density of that body?

Of necessity this question was started by Newton, whose system was the first in which it became of more interest. Having no means of submitting it to experiment, he made one of these sagacious guesses which has been
be collected and preserved, would alone have kept his memory alive. 'Unde cum terrae communissima suprema quassae gravior sit quam aquas, et paulo inferius in fodiens quoddam quadripol vel quadripol aut etiam quattuor gravior super perientur: verisimile est quod copiae materiei tota in terrae quassae quintuplo vel sextuplo maior sit quam si tota ex aqua constaret.' (Principi, iii. 10.) That is, he judged the earth to be between five and six times as massive as the same bulk of water; which is the truth.

The relative masses of two planets are determined by the observation of their effects upon a third. Two preliminaries are required: first, the great assumption of the theory of gravitation, that any two particles of matter must attract one another with forces which at different distances are directly as their masses, and inversely as the squares of those distances; secondly, the mechanical consequence of this law of action, namely, that two spheres, having their centres at equal distances from a third body, attract each other in the same manner as if each were collected in its central. Without describing the mode of arriving at such a result from observation, suppose it is ascertained that two planets, A and B, whose distances from a third are as 4 to 5, attract the earth in such manner that both are brought to the distance 1 from the third, the attraction of the first will be made (4 x 4) or 16 times as great as before, and that of the second (3 x 3), or 9 times. Consequently, the new attractions will be as 7 x 16 to 2 x 9, or in the same proportion as 112 to 18. The second attraction in the proportion of the masses; therefore these masses are as 112 to 18. Now suppose the radii of the planets to be as 3 to 2; then their solidities are as 27 to 8, and if the densities (mean) are 5 and 4, the masses are as 27 to 8. The apparent solidities being thus as 27 to 18 x 27 : 896 : 486. If then the mean density of either planet be known, that of the other can be found.

The principle of the preceding process exists in every apparatus of this nature, which was made to find the mean density of the earth. The earth itself is composed of two planets; some known substance, a mountain or a ball of lead, is made the other planet. The attracted body is not a planet, but a pendulum or a plumb-line, and the effect of the mountain or ball being measured, that of the earth being either measured or previously known. The actual attraction of the mountain or ball being thus determined, its effect as it would be if placed at the centre of the earth can be calculated; which effect is to the effect of the earth as the mass of the mountain or ball of lead to that of the whole earth. The result of this process, as usual, is condensed into a formula, in which the mode of making the steps is lost sight of: but the above is not the less the manner in which the experiment must be carried on.

The hint given by Bouguer, the experiment of Masseleyne, and those of Cavendish and Zach, have been briefly described in Attraction. Since their time two repetitions of Cavendish's experiment have been made: the first, by Mr. Reilly, in 1807, is described in the Philosophical Transactions, p. 92; the second, by Mr. Baily, at the request of the Astronomical Society, and at the expense of the government. The former obtained the same result as Cavendish, but the experiments were few in number; the latter obtained a result slightly differing from that of Cavendish, but in so many different ways and for so large a number of experiments, that it is impossible to doubt the superior correctness of the conclusion. We shall give the results of the second, with some account of the process (which is substantially that of Cavendish) as our limits will allow us to refer to the volume already cited for more detail; very few experiments have been either so well performed or so satisfactorily described.

The large wooden pendulum (76 inches long) was provided, moving on a single or double metal wire, or on a double silk line, the mode of suspension being varied from time to time. At each end was suspended a metal or other ball; and these balls (a and b) were the principal attracted substances. The whole torsion-rod with the suspension was enclosed in a case, with a glass at one end. Large leaden balls (A and B) of about twelve inches diameter (the attraction of which on the torsion pendulum is the quantity to be measured in the experiment) were made to travel on a line so suspended that they could quickly be brought up laterally on opposite sides of the balls, as in the diagram. We must leave out the whole account of the preconceptions against electricity or radiation, the manner of finding the actual position of the pendulum, &c., and confine ourselves to the principle of the experiment.

When a torsion pendulum, such as that described, is left to itself, it never is reduced to absolute rest. The instrument is so delicate that it is continually shifting its direction, so that it cannot be permitted to take a series of observations and make use of them all in determining one mean place. The mode of finding the point of rest, that is, of deducing it from observing the extremes of the vibration, is described in the work cited. The line of rest of a Newtonian pendulum is ascertained, and the large balls are brought into the attracting positions at A and B, on continuing the observation an immediate alteration of the line of rest is seen towards the large balls; say that it becomes nm. Then the observations are the same as if the large balls were altered so that the angle nmO is made, in consequence of the approach of the large balls. The extreme positions of the pendulum, and the assumption of which, as a universal property of matter, led Newton to his explanation of the planetary motions. Many of those who were content to rest on the same as a demonstration, or to explain, say that the pendulum itself must be changed, in consequence of the attraction of the weight.

In making the experiment the effect was usually doubled by placing the large balls first on one side of the smaller ones, and then on the other, thereby altering the whole of the double displacement.

This distance of course was accurately measured.
ball, and its easy consequence, namely, the number of times the whole earth would contain a similar bulk of water: 5. All the necessary corrections for the attraction of the other parts of the apparatus upon the torsion pendulum.

The larger masses were leaden bars, but the smaller balls attached to the torsion pendulum were changed from time to time, and different substances were used. The following table of results will be more interesting than any description we could give in the same space. It shows the results of experiments made after the effects of radiation were removed* by additional precautions. The first column is the number of experiments made, with the small balls and mode of suspension described in the third; the second column is the result of the experiment as deduced from the set of experiments; the third describes the small balls and mode of suspension employed; the numerals, which are fractions of an inch, representing the distance of the suspension wire, when single, and the distance of the wires when double or bifilar.

<table>
<thead>
<tr>
<th>No. of</th>
<th>Density.</th>
<th>Balls and Suspension.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>6154</td>
<td>bifilar iron</td>
</tr>
<tr>
<td>5</td>
<td>6933</td>
<td>do.</td>
</tr>
<tr>
<td>3</td>
<td>6787</td>
<td>do.</td>
</tr>
<tr>
<td>9</td>
<td>5895</td>
<td>1-2 inch brass</td>
</tr>
<tr>
<td>5</td>
<td>6786</td>
<td>2-inch brass</td>
</tr>
<tr>
<td>5</td>
<td>7678</td>
<td>2-inch ivory</td>
</tr>
<tr>
<td>7</td>
<td>7677</td>
<td>do.</td>
</tr>
<tr>
<td>7</td>
<td>7678</td>
<td>do.</td>
</tr>
<tr>
<td>7</td>
<td>7678</td>
<td>do.</td>
</tr>
<tr>
<td>5</td>
<td>7353</td>
<td>do.</td>
</tr>
<tr>
<td>102</td>
<td>5719</td>
<td>do.</td>
</tr>
<tr>
<td>170</td>
<td>5716</td>
<td>2-1/2 inch brass</td>
</tr>
<tr>
<td>20</td>
<td>6806</td>
<td>1-inch lead</td>
</tr>
<tr>
<td>4</td>
<td>6598</td>
<td>2-inch zinc</td>
</tr>
<tr>
<td>104</td>
<td>6552</td>
<td>2-inch lead</td>
</tr>
<tr>
<td>111</td>
<td>6899</td>
<td>2-inch zinc</td>
</tr>
<tr>
<td>129</td>
<td>6377</td>
<td>2-inch ivory</td>
</tr>
<tr>
<td>5</td>
<td>6365</td>
<td>2-1/2 inch brass</td>
</tr>
<tr>
<td>5</td>
<td>6395</td>
<td>1-2 inch glass</td>
</tr>
<tr>
<td>9</td>
<td>5999</td>
<td>2-1/2 inch brass</td>
</tr>
<tr>
<td>5</td>
<td>5866</td>
<td>2-inch lead</td>
</tr>
<tr>
<td>5</td>
<td>5862</td>
<td>2-inch lead</td>
</tr>
<tr>
<td>9</td>
<td>5866</td>
<td>2-inch zinc</td>
</tr>
<tr>
<td>5</td>
<td>5333</td>
<td>do.</td>
</tr>
<tr>
<td>8</td>
<td>5255</td>
<td>2-inch lead</td>
</tr>
<tr>
<td>10</td>
<td>5377</td>
<td>2-inch zinc</td>
</tr>
<tr>
<td>50</td>
<td>5000</td>
<td>2-1/2 inch lead</td>
</tr>
</tbody>
</table>

The results of individual experiments vary considerably, but it is important to observe that there is nothing which indicates that different kinds of matter attract each other according to different laws. If the large ball of lead exerted different attractions upon particles of brass and ivory of the same weight, the effect would be to give the whole earth one mean density, or another, according as the smaller ball of brass or ivory. Now it is true that the experiments give all manner of results from 5:500 to 6:154, but on examining the results, there appears no evidence whatever of the large balls attracting the different small ones more differently. If such were the case, undoubtedly the mean density, determined from different substances would be different; but though such is the case in the preceding list,

and even though it would seem that the lighter balls give the larger densities, yet there is every reason to suppose that the effect is to be attributed to the alteration of the pendulum. Thus it will be seen that the difference is not so much between the results of 2-inch ivory and lead balls suspended in the same way by a single copper-wire, as there is between the results of 2-inch lead balls suspended by bifilar wire, and those of 2-inch ivory, and also that ivory balls differently suspended give results which have differences as great as any. The mode of suspension and the effect of merely increasing the weight of the smaller balls, appears much to exceed that of applying different substances; but not so strong to any law. In fact, the differences are altogether of that character to which the term discordance is applied; following no settled rule, and exhibiting every appearance of as often affecting the truth by a positive as by a negative error. The first three sets, in which a brass rod alone is used, were rather a defiance to the apparatus to fail it could, than seriously intended to help the result. Almost all the experiments were made with a light wooden torsion-rod, and comparatively heavy balls appended. The trying a brass rod itself excepted at the attempt at obtaining a mean density by noting the attraction of the larger balls upon the torsion-rod only, was the introduction of an extreme case, to increase confidence in the more ordinary experiments.

The mean of the whole is 5-677-7, and, rejecting the experiments of which the character would be a priori most doubtful (though it is not certain they ought to be rejected) it is reduced to 5-660-4. From the experiments, by the usual rules of the theory of probabilities (see the notes above), it is an evident truth that the error of this result is within 0-4. Cavendish's result was 5-48.

Besides the confirmation of some of the most material points of the theory of gravitation which results from this experiment, it furnishes a confirmation of the assumption that the earth is solid to the centre, and not, as many have supposed in every age, a hollow shell. The mean density \( \rho \) is very much greater than that of the substances which abound at the surface. All common rocks are under 3, and nothing under 2 of the hardness of 7.27. The earth is as massive as if it were all composed of silver-ore, from the centre to the circumference, so that there must be an increase of density towards the centre. If those who think the earth to be a shell were to presume that its solidity would begin at the utmost surface, they would then be compelled to give to the terrestrial matter, one part with another, a density greater than that of mercury, in order that the whole shell, the hollow part included, might have the mean density which is found for the experiment.

**WEIGHT OF OBSERVATIONS.** This term was first applied in the manner stated in the article Mean. An observer decided the relative merits of his observations by his unassisted recollection of the impression that the various observations made upon his mind at the time of the experiment afforded to him, that is, supposing \( A_1, A_2, \ldots \) to be the result of observation, he attached numbers \( c_1, c_2, \ldots \) proportional to their presumed goodness, and used \( \sum c_i A_i / \sum c_i \) instead of \( \overline{A} = \overline{n} \), for the average. Instead of \( c_1, c_2, \ldots \) any numbers, and in applying the higher branches of the theory of probabilities, it was found that a certain mode of obtaining \( c_1, c_2, \ldots \), while it gave the same mode of using these numbers in the formation of an average, made the result not so important when used, as the arithmetic mean. We here give a sketch of the results of this method in its simplest parts.

1. When a number of discordant observations, made under circumstances in which positive and negative errors are equally likely, do not differ much from the truth, it is exceedingly unlikely that the truth can differ much from the observations, it may be presumed that the chances of the error of any one of those observations lying between \( x \) and \( x + dx \), and between \( a \) and \( a + \delta a \), are severally of the form

\[
\sqrt{\frac{c}{\pi}} e^{-c x^2} \, dx \quad \text{and} \quad \sqrt{\frac{c}{\pi}} e^{-c (a + \delta a)^2} \, dx,
\]

where \( c \) is a constant dependent on the goodness of the observations, and \( a = 3-14159, \ldots \), \( c = 2-718 \).\ldots

* This article is only for the reference of the experiments. Mean will be found much as if \( x = a \).
Even if this law of error do not exist, it is found that the treatment of a considerable number of observations, whatever be the law, is reducible to the same form as those derived from this law, which is now universally assumed by those observers who apply the theory of probabilities to their results.

2. The constant \( c \) is called the weight of the observation, and depends upon the various circumstances which determine their goodness or badness. The greater it is, the better is the class of observations to which it applies. It is approximately found, for a given class of observations, as follows:—Subtract each of the observations from their mean \( \bar{x} \), and then add the square of these differences the square of \( \bar{x} ; \), and then add the square of these differences, and divide it by \( n \) times the square of the mean; and before doing this any convenient quantity may be subtracted from all the observations, provided it is also struck off from the mean.

3. The probable error is that which, taken positively and negatively, there is an even chance an observation shall lie. Thus if there be an even chance (A being the true result) for the result of an observation lying between \( A - a \) and \( A + a \), then \( a \) is the probable error of an observation. To find the probable error, divide \( 4\sigma\frac{\bar{x}}{n} \) by the square root of the weight.

4. The average of the observations is the sum of the weights of the component observations. If \( n \) observations, \( A, A', \ldots \), be made, all of the same weight \( c \), the average is \( \frac{A + A' + \ldots}{n} \), and the probable error is \( \frac{c}{\sqrt{n}} \). But if the weights be \( c_1, c_2, \ldots \), the average is \( \frac{A c_1 + A' c_2 + \ldots}{\sum c_i} \), and the probable error \( \frac{c}{\sqrt{\sum c_i}} \). A concrete example of this is the case of length, surface, capacity, and weight. The angle is another magnitude which has a natural measure [Stand. p. 435]; and, as this has never been out of the hands of geometers, a greater uniformity has prevailed in the measurement of angles than of any other whatsoever. The measures of length obviously regulate those of surface and capacity. There is no other way of defining an area or a solidity, except by describing, for the area, lengths, and for the solidity, surfaces, by which each may be bounded. The number of measures of weight may be obtained by defining, as standards, given bulks of given substances; and as water is the most common and most easily purified of all substances, it has been chosen by common consent as the referee for such standards. A measure of length then is all that is wanted in the first instance, and most nations, antient and modern, have been in the habit of referring all the resulting measures to those of length alone. Nevertheless, there is no small difficulty in obtaining a comparison of a measure of weight obtained from length, and that of that length, by such a manner as to perpetuate the former, if the utmost accuracy be required. (Kater, Construction and Adjustment, &c., 'Phil. Trans.', 1826.) So that the Commissioners recently appointed to revise the standards [Hansard, p. 493] advise that the standard of weight shall no longer be deduced from that of length, but shall be simply a piece of metal or other durable substance.

It is not our object in this article to consider weights and measures in a scientific point of view, nor to give some historical account of the measures actually in use, and some tables of the principal ones, antient and modern. There is no subject whose history is more distinctly divided into three periods, antient, middle, and modern, than this; the weight and measures before the modern period, ending with the decline of the Roman empire, during which the classical standards were preserved and employed; the middle period, during which, while the names and relations of the classical measures were preserved, they were less or more altered, the various differences of national measures began to exist among the people; the modern period, which hardly begins before the seventeenth century, in which the discrepancies between the national measures were so near the same that the writing of the names, &c., are in all languages derived from the same source; nor, in the popular view of measurement, do
they materially differ in length. It is also unquestionable
that in former times, when authentic measures were not so
easily to be obtained, the hands, arms, and feet were much
more frequently used than they are at present, when every
workman, however humble, in possession of a workstation.

George Agricola, presently named, says that in his time
the beginning of the sixteenth century, the French work-
men commonly measured a foot by joining the extremities
of the thumbs, clenched the fingers, and keeping the
heels as widely extended as the thumb. They also used
measuring rods and scales of pitch in public contracts of
portraits politiciis alinrutosque observati; nor is this a
bad measure of a French foot. At what period the
slightly variable measures derived from the living man
were made, I am not able to tell. This care and the other
conventional value, whether among the Greeks or Romans,
unknown. All that can be said is, that none of the earlier
writers enter otherwise than incidentally upon the question.
The fixed and legal measures were of early date. Few
authors give some information upon the subject, even
the poets are frequently cited for their allusions
fixing the end of the ancient period about the middle
of the sixth century. Simply because the charts of writers
who mention the measuring system and measures, for

let it be observed as well known as Homer or Vergi-

lus or Scipio, Priam or Vespasian, there is direct
information on the subject in the works of fragments of
Cicero, Columella, Dioscorides, Heron, Lucan, Pliny,
Ovadius, Pollio, Festus, Plutarchus, Priscus, Priscus,
Pausanias. In his Report of the twenty years ago, he
states expressively on the subject. Priscus of Romano
Flux, who wrote a poem on the subject, was an argument
in Scipio. The archaic Greek, Festus, Plutarchus,
Pausanias.

It may be convenient to end the middle period and
consider the modern with the work of Lucius Persius
573, as being the earliest of the writers who are fre-
cently cited, for success in their attempt to reconcile
the laws of measure and the final results of the
earlier period may be studied and that which precedes

of the invention of printing. All this was more
true in the former part of the time. We may here refer
as exactly, the probability弹簧的 introduction of
measure and weight as a commodity, though retaining
the same names. Nevertheless, the words as we have seen in
Mis. Seventeenth, denotes a mixture of expression, an
intemperate mixture of meaning and between a measure of
the word, measures, as they are called. When the German
rule was introduced, there is not about four Roman miles, the

An abundance of passages must be cited from
writings of different countries about the remainder of
the middle period. But in the first of the following
passages, according to the following measures, measure
which the learned had among themselves, or else they had
a system of measures in terms of which they communica-

ded with each other, not recognizing we in any way

life to the common or national system. For an

the idea that this system is in existence to

and was continued under the assumption that a


was desirable, attainable, and in its tendency to

be gained and perceived.

In this point in the history of measures, the


a meteorologist, and as some of its results are


able to be traced, it will be desirable to make a

As far as we can trace, it was Intemperate measure

that a certain number of centuries before, we shall

the Roman system was taken for granted. As the

speaking of a foot or a mile, a measure of

Polybius, Pliny, and others, and the measure of

should be of a different system. It appears,

alike measures; though upon the modern

authors, in fact, may be admitted that the modern

measures are in six words, with the

which had been made to the Lucan


Agricola, whose work, De Ponderibus et Mensuris,

much in use, and several times repeated (Paris, 1533;

Venice, 1532; Basle, 1566), and perhaps others, and

almost seem to hint, in addition to what we have already

cited, that the actual measures of his day, being among

taken from the body: the measures of length, he says, are

members' human corpora, puncti, arenotches, and

the body, the cubit, &c., were only originally derived

the human body; for such an explanation would render

us to say that the armeton and the funicles were names

of measures, which was certain and not so, the

words etymologically, it is both a pole and the measure

described from that pole: had it not been from the double

meaning of that word, we should have been quite positive

of what we now think by far the most probable, namely

that the arms and the feet, reckoned from the

of the body, proper of each and every one.

This work of Agricola, though intended to be on the

and measures of the animal, and really nearly one part

from the Greek and Roman measures. We have

with the name, or the measure of the parts of the body,

cases of extremes and strings. This

of Peter Arabi, although intended to be on the

and measures of the animal, and nearly one part

from the Greek and Roman measures. We have

with the name, or the measure of the parts of the body,

cases of extremes and strings. This

of Peter Arabi, although intended to be on the

and measures of the animal, and nearly one part

from the Greek and Roman measures. We have

with the name, or the measure of the parts of the body,

cases of extremes and strings. This

of Peter Arabi, although intended to be on the

and measures of the animal, and nearly one part

from the Greek and Roman measures. We have

with the name, or the measure of the parts of the body,

cases of extremes and strings. This

of Peter Arabi, although intended to be on the
paper. The surest case in which we can accurately ascertain what proportion this shrinking has taken place is in the plate of Bernard's work on English weights and measures, which a line which is described as 7 English inches has shrunk to 6 inches and 25-thirtieths, or in the proportion of 42 to 41. Other instances give smaller amounts of shrinking: we adopt this ratio of 42 to 41, and that is the reason why the larger the proportion we name, more is our final conclusion weakened: this final conclusion being, that the geometries of the sixteenth century used as much shorter foot than the Roman.

That the mathematicians just named did use a set of measures, forming themselves, in order to avoid the varieties of popular measures, is established by the express assertion of Clavius, who died in 1612, aged 75, and is therefore a contemporary authority. He says, in his commentary on Sacrobosco, 'Emmemandse sunt measurse quibus inquinis iurisprudentiae omnes nationes habeuntur. Centuri certo, tertiariae, quartarum, sextarum, octonarium, ne confusioni oritur ob diversitatem mensurarum in variis regionibus (qualibet namque regio proprias habet propomodum measuras) utilit consequent quam mensuras, quae certe ac ratam apud omnes nationes habeuntur. Centuri, tertiarum, quartarum, sextarum, octonarium, mensuras, of the great diversity of measures. This paper-foot is now within a sixtieth of an inch of nine inches and two-thirds (English), which, increased in the proportion of 41 to 42, is nine inches and nine-tenths. In the second work, he says that his five of his own pages, or of those of ordinary men, make six geometrical pages. Now the pace of an ordinary man, or two steps, is almost exactly five English feet; but we have found that there were other measures, the foot, as 129. English inches, and have therefore considered him as having (by accident, they suppose) measured his degree with very great correctness, whereas, in fact, he is 10 miles wrong. Budæus (followed by Glareanus and others) before the year 1526, in his treatise of Asse, the earliest work on Roman measures, &c., declared that the Roman foot was the same as the Parisian; and Picard, &c., seem to have taken it for granted that Fernel followed Budæus, they might have learnt from Lucas Passus they had been in Budæus, London, 1526, by Basset, nothing in common with the Roman foot.' The treatise of Stöffer, 'De Menestrationibus,' Oppenheim, 1524, contains his configuration of the digit, palm, and foot, separately, the foot being also divided into palms. These agree exceedingly well with the above, and the foot is precisely 9 inches and three-quarters (English). This increased in the ratio of 41 to 42 gives 9.99 inches. The author speaks of the digit, &c., as being the celebrated measures which are used by all or most, and gives no hint whatever of his having made a measure for himself. It may here be noted that the English writers of the period make little mention of this book-system, and, when they do mention it, sometimes confound it with the common and popular system. The most recent, in his 'English Grammar,' according to Stöffer, is two inches and a half less than ours; alluding, no doubt, to the foot we have just cited.

* * *

* We have taken the one which is against ours: in the 'Pathway to Knowledge,' (1996) not the work of Recorder under that name, but a translation of an earlier work, there is no account given in bibliography of six English inches, figured in the translator's preface, but shrunk only by one inch. With reference to this path, we may observe that Jove's, whose sample and laborious account of weights and measures (in his 'Aoytorygkolia, or Aristarchean Survey of Weights and Measures,' London, 1674) makes him a very respectable writer, considers it as a first-rate authority.

* * *

There is little reliance to be placed on the barley standard; nevertheless, this addition to the Roman system of measures has been made by some who had true taste. We can hardly suppose that writers in all cases care fully state that four grains of barley placed side by side give their first and lowest measure, unless they were at least repeating a well-established tradition, founded upon the accustomed practice of preceding ages. Hence the barley, in 64 grains, placed side by side, ought to give their foot: we believe it will be found very difficult to make any barley of our day give more than 10 inches. On trying the first grains we obtained, we found that, by picking out the largest size, we could make 9 inches and a half, or 10 less, the mean size of six inches; but that, taking the grains as they came, 38 gave only five inches. Not wishing however to trust to one trial, we procured the largest specimens of barley which could be got from two different and distant parts of England, and from three different species, and we have placed the three grains. In a first sample, 31 grains placed side by side gave five inches; in a second, 33 grains gave five inches and one-tenth; in a third, 33 grains gave also 5 inches and one-tenth. And yet these grains had differed a little in length from English barley, and we found that the length of the grains differed materially, their breadth very little. So that the antient English standard, which depended, or was said to have depended, upon the length of barley, could have been nothing, this end, was not founded upon so sure a method as that above described, which depended upon the breadths. The foot of 64 barley corns derived from the average of the preceding (rejecting that from the smaller grains of the London sample) is 9.69 inches. The diminution of sounder notions, we see, might be supposed from the other methods of judging, which, however, it must be remembered, have been pushed to their utmost.

We feel persuaded from all that proceeds, not only that at the beginning of the sixteenth century there was no distinction made between the measures of the learned and the Roman measures, but that the Roman foot, the foundation of all, was taken to be considerably shorter than the truth, having been probably recovered from the human body. A record of standards of sounder notions, we see, traces of the same sort of thing. For instance, in the second edition of the mathematical Lexicon of Vitalia (1690), the first edition (1668) being silent on the matter, an article on measures is introduced in which the only authorities adduced are the 1st Edition of Albertus ab Alexandre, in which there is nothing but description of antient measures, and the work of George Agricola already cited. The Roman foot was recovered with tolerable ease as soon as it was looked for. Leonard di Portis, an Italian lawyer and Lucas Passus, another lawyer, wrote elaborately on the antient weights and measures in 1573. Those who would see more of this subject in the sixteenth century must peruse, for the writings of Alciatus, Aesop, Geofredo, Budaschar, Budaschar, Montesius, Martens, Lebrixia (Nabresienne), Neandt, Pas, Passus, Portius, Villaplavina, &c.

As soon as the middle period is past, the history of weights and measures shows our own time ceases to be European, and, with the exception of those of England and France, we need not, in so short a sketch as the present, give any very close account of the various national measures.

In England, it seems as if the standards were tolerably well settled and widely diffused at so early a period that the writers of this country took comparatively little notice of the system which the continental mathematicians used for their own communications. That the ear of barley and the barleycorn is still the family measure, it is difficult to suppose that the foot, even this. 

* We do not believe the story of Henry I. ordering that the yard should be of the length of his arm.

* A silver penny.
a bol. &c. And the interpretation of the older scientific writers on measures is agreeable to the common meaning of the word. It is first grounded,' says Oughtred, 'and principle of our English measuring from Bayly comes.' But it is so difficult to know how much of the sharp end of a barley-corn must be cut or worn away before it becomes what was called 'round,' that this mode of measuring barley-corns is very indefinite.

Standards were made at early periods for various statutes; one of the earliest is one of Edward I. of uncertain date, which directs that a standard of bushels, gallons, and eils, shall be kept in every town, agreeing with the king's measure. By the measure of law of this country has been fortunate, and its standards have, for commercial purposes, fully deserved the name. But the measure of capacity [GALLON] remained various in spite of all acts of Parliament. In the year 1680 there was a dispute in the House of Commons about the measure of the gallon. From general opinion, which gave 231 cubic inches, and with which, in fact, the gallons in common use agreed, as was proved by the movements of Oughtred, Gunter, Briggs, and others. The customary standard at the Guildhall, which, though not a legal standard, was considered as such, even by the law-officers of the crown, and which, though in reality only 224 cubic inches, was always taken to be 231 inches: The real legal standard, preserved at the Treasury, containing 228 cubic inches. (One cubic inch = 1.6387 cubic centimeters.) 'A gallon is,' that because of the frothing of the ale or beer, the quantity becomes less, and therefore such liquors as did not so yield froth, as wine, oyle, and the like, should be considered in determining the measure. The Report of one of the Committees states that the wine as it was sold had shrunk in capacity, until it was arrested at 231 cubic inches by a fiscal definition. That this value was laid down by the statute of 5 Anne, cap. 27, is certain; and the origin of this definition is that it was inserted into a statute having nothing to do with weights and measures, and has been as follows—A little after 1700, an information was tried in the Exchequer against one Barker, for having imported more of Alicante wine than he had paid duty for. 0. In the words of the statute, which is inserted into a statute having nothing to do with weights and measures, the measure of the gallon at Guildhall (said to contain 231 cubic inches) was the standard. But the defendants appealed to the law, which required that a standard gallon should be kept at the Treasury, proved that there was such a gallon at the Treasury containing 228 cubic inches, and established, by the evidence of the oldest persons in the trade, that the pipes and hogsheads which came from Spain had always contained the proper number of the real standard gallons. A jury was withdrawn, and the law-officers of the crown took their stand on the explanation of the statute, and the jury decided in favor of the defendants. Another instance of confusion could hardly be imagined: the legal gallon had gradually diminished more than 50 cubic inches; the merchants in one particular trade continued to import and to pay duty by the real gallon, and were branded as those who, in common with the rest of the world, had forgotten what the real gallon was, and sued for penalties upon appeal to what was no more a legal standard than the measure in a private shop.

There is something curious about the history of the experiment [GALLON] mentioned by Ward, who was an eyewitness, and wrote just after the statute of Anne, when his account could do no harm. The gallon was found to be 228 cubic inches. But this was not the only gallon, for the gallon at Guildhall, (said to contain 231 cubic inches) was the standard. But the defendants appealed to the law, which required that a standard gallon should be kept at the Treasury, proved that there was such a gallon at the Treasury containing 228 cubic inches, and established, by the evidence of the oldest persons in the trade, that the pipes and hogsheads which came from Spain had always contained the proper number of the real standard gallons. A jury was withdrawn, and the law-officers of the crown took their stand on the explanation of the statute, and the jury decided in favor of the defendants. Another instance of confusion could hardly be imagined: the legal gallon had gradually diminished more than 50 cubic inches; the merchants in one particular trade continued to import and to pay duty by the real gallon, and were branded as those who, in common with the rest of the world, had forgotten what the real gallon was, and sued for penalties upon appeal to what was no more a legal standard than the measure in a private shop.

We believe, in acting to declare that the old gallon which almost all the statutes refer to, is none other than what will be the volume of a large lyer's measure, just as Oughtred, the old division of the gallon into that of wine measure, ale and beer measure, and dry measure, was not unknown to the law, but even to writing on arithmetic, till the beginning of the seventeenth century. And when Briggs, Oughtred, &c. measured the gallons, did they divide them into more than two kinds—for ale and wine. Oughtred, who measured beer, and found 273 1/4 cubic inches for the deduced gallon, imagines this to be the ale gallon. It was undoubtedly the old Winchester gallon, before its content was a little reduced. The statute of 1798, and all that followed, continued in use in Ireland up to the introduction of the decimal system; and even in England, as late as 1727, Arbuthnot takes it for the existing dry measure. Perhaps we have the first time in which, and the first person by whom, the distinction of the measure of ale and wine was made known, and the gallon to contain 273 1/4 cubic inches, with the good citation from Wybred ('Tactometria,' 1650, p. 266):—'Now as to Mr. Oughtred's ale gallon of 272 1/4 inches, the said Mr. Reynolds (John Reynolds, a clerk in the Mint, often referred to by Wybred as a mathematician and experimenter) indeed allows both of such a Gallon measure, but not for any liquid thing, but for dry things, as Corne, Coals, Salt, and other dry things measurable by this kind of Measure, and so calleth it the drie Gallon measure: and thereupon he will have to be 3 severall Gallons (or other Measures, of which the first for dry Waters, and the like, another for Ale and Beer, and a third for Corne, Coales, and the like.' Wybred, rejecting the distinction of the dry and ale gallons, made his wine or ale gallons to be 228 and 230 cubic inches, by a series of carefully considered experiments, and the only good experimenter, with access to existing standards, and as good an experimenter to suggest something like the actual truth, should not have been able to find out the mere existence of the large or small gallon, as it was an extreme confusion in which the subject was then enveloped.

There has been in various quarters a disposition to suppose that the varieties of gallons arose from the varieties of pounds, since the original definition of the gallon depended on the pound. We think that this is a mistake, and we do not imagine that it was done for set purpose, but by confounding one species of pound with the other, in the way of common mistake. There is among most antiquarians a perverse unwillingness to admit human frailty among those phenomena of the human mind which has caused many an hour to be thrown away in trying to reconcile the Greek musical scales [Tetrachords], and many more in trying to find out the rude forefathers of all kinds of nations an accurate and self-consistent system of weights and measures. Thus we find that even the English, after having legislated, legislating for educated men, after declining in one paragraph that none but troy weight is to be used, has introduced avoirdupois weight in the very next paragraph,—we never permit ourselves to suppose that such a thing could have taken place in the reign of James VI. or Elizabeth. Now it certainly does happen that there is a close relation not only between the old gallons and the weights, but even between the different varieties of the old gallons and the weights. There was a gallon of 226 cubic inches, in the Exchequer as a standard; there was one of 272 1/4 inches, in common use; there was one of 231 inches, in common use; and there was one of 224 inches, in the Guildhall. Now 283 and 232 are, as near as integers will allow it, in the proportion of about 1.2 to 1 to the pound troy, and 272 and 224 are as nearly in the same proportion. It is unlikely that this should be accidental.

Common usage, in the sixteenth century, made more distinctions of measure than have lasted. The editor of the 'Pathway to Knowledge' gives four sorts of pounds in use: the Tower pound (already mentioned in Troy), the London pound (of 2400 pounds=2240 pounds), the Winchester pound (of 2520 pounds), and the Oxford pound (of 2680 pounds). The Oxford pound is also called the old measure, as that of air, and contains eight pounds of wine: it is also made the ounce gallon containing eight pounds of water. We allude to the College of Physicians, in the matter of the old apothecaries' measure, presently mentioned. The mistake was exceedingly natural, almost inevitable, but it shows what extreme care is necessary.
the troy and ‘haberdapys,’ the substill, and the foyle. The word substill was not the one mentioned in Tare, at least not as such, so let the reader try to understand it himself:—The pound substill was used for that in small quantities it may be made rattle to represent any other weight whatsoever, as fourpenny weight troy, or less to answer in due proportion under the law. The pound substill was convenient to use, with his pac, every part sensible and severally to be bandied. This weight is unsuitable, to assaye Maisters and such as can make triall of minerals, and not knowne to many other, neither is there any use thereof, in ordinarie accomplis. This seems to me the most practical piece, an assayer would hang it up for trial, was made to represent a pound, and the fineness expressed in ounces of that small pound would of course represent that of the actual pound. The pound foyle was less than the pound troy by its fifth part, and was used for gold foil and for Base. In the two former cases it obviously means that the workman paid himself for labour and loss by selling four-fifths of a pound of wire or foil at the price of a pound of bullion. And many varieties of measure arise in this way, namely, by owing, not the actual weight, but the amount of a given name at a given price. A wholesale bookseller now says that he sells 20 or 24, meaning that he who buys two dozen shall have one more; but in the sixteenth century this usage existed, it would have been put down that two dozen of books are twenty-five.

It is needless to give an account of the old standards of weight mentioned by the committee of 1758, as many of them are lost; a much greater agreement was found to exist with the preceding made as various times than was observed in regard to the standards of capacity. The origin and history of the different weights is alluded to in Averdupois and Troy; of the standards of length in Standard, in which last article will be found an account of the transition to the newly established rectified measures. That period is probably distant when the English public shall enjoy the advantages of a uniform decimal system of weights and measures—the only one which is sure of stability. An opinion is gaining ground that the best method of ultimate and fundamental is by being legally exact and by being there, and this is recommended by the commissioners who have recently reported. [Standard.] Nothing, as it fortunately happens, can be easier than this change; the introduction of coins of two shilling each, in place of threepence, followed by that of coins of two shilling and penny each, might be made without requiring any alteration in the habits or calculations of any one. It is the advantage of this proposition that the two new coins which it requires to be coined form parts of the one thousand, and that the subsequent alteration of the copper is made. As soon as these coins are well established, an alteration of four per cent. in the copper coinage, or the enactment that two and half shilling shall pass for the silver shilling, is the whole system of plate, and the precious metal, need alter its weight; but the twopence-halfpenny coins of their proper name, the two-shilling coin of ten teepose-halfpenny coins (also under their proper name), and the twopence-halfpenny of ten farthings as at present. As soon as this change is made, and the convenience of its arithmetic found by experience, it will not be long before there is a demand for the extension of the principle to weights and measures. And it would be well if those who endeavour to bring about a reform in such a matter, would make use of the encouragement of the only change which a government can immediately command—that for one calculation which is made upon goods, hundreds are made upon money—and that, if the small alteration which is required to make with troy weight, is not merely pure duty, it is, there is little chance of the more extensive changes which the weights and measures will require.

We now describe the English weights and measures as they stood on the last day of the year 1825, immediately before the introduction by law of the imperial measure, with some remarks on their states at different times. As it is not to such an article as the present that the young arithmetician will refer, it will not be necessary to give more than a condensed set of tables. For the modern compiler who has to acknowledge great assistance from Dr. Kelly's 'Cambist,' the standard work on the subject.

**Troy Weight.** This weight is said to have always been

the standard weight of the country: on this assertion we have some doubts; but this is not the place to enter on them at length. For the troy pound is 20 ounces; the troy penny is 24 grains. The troy pound is 5760 grains. There is but one grain in use, whether troy or averdupois, and a cubic inch of pure water is 232.458 grains (barometer 30 inches, thermometer 62° Fæ). A pound of water is 720.48 grains. Wheat and bread were once measured by this weight, but latterly only gold and silver. It is usual to say that precious stones are also measured by troy weight; but, as may be supposed, the measure of these is the grain. The diamond is measured by grains of dupois, to the troy ounce; so that the carat is 34 grains, very nearly. In pearls, the old troy measure already noticing still exists; for the pearl grain is one-fifth less than the troy grain. In the seventeenth century the goldsmiths divided the ounce troy into 12 carats of four grains each; this practitioner counted the pound troy contained 1152 gold-carat grains. They also divided the ounce into 150 carats of four grains each, for diamonds: the pound troy contained 7200 diamond-carat grains. But now the carat has only the sense noted under that word, for gold and silver; and is altered as above for diamonds.

According to the old statutes, the pound troy is 7980 grains; for 32 grains are to make a pennyweight, 20 pennyweights a troy ounce, and 12 troy ounces a troy pound. This, or why the pennyweight was first made 24 grains. In some old books a grain is 20 mites, a mite 24 drouetes, a drouete 20 pereotes, and a pereote 24 blanks. This division of the grain into 230,400 parts must of course have been for accounting: it is said to have been confined to the moneyers.

**Apothecaries' Weight.** In dispensing medicines, the pound troy (Does that weight ever occur in prescriptions?) is divided into 12 ounces, the ounce into 8 drams, the dram into 3 fluidounces, and the fluidounce into 8 drams. In the following, it is to be weighed by what we now call apothecaries' weight. The fact seems to be that in the first instance the more precious drugs, as musk, were weighed by troy weight, in the same manner as the more precious metals; and that the common medicines were dispensed by fractions of what was the common pound, as we shall see under the next head.

**Apothecaries' fluid measure.** In 1836, in the new edition of the Code of 1828, the Colline of France, Dr. Young (who has reduced them from Vega), the apothecaries' grains used in different countries are as follows:—1000 English grains make 1125 Austrian, 956 Besirne, 981 French, 830 Genoese, 958 German, 975 Italian, 896 Neapolitan, 993 Spanish, 954 Portuguese, 982 Roman, 893 Spanish, 988 Venetian.

**Averdupois weight.** The pound is 16 ounces, and the ounce 16 drams: the modern pound is 7000 grains (the ounce, 437.5 grains); the troy pound and ounce are 20 and 27 grains and 11-32nds of a grain. The hundredweight is 100 pounds, and the ton 20 hundredweight. The cubic foot

* Cocker, Wighste, re., say that a pennyweight is 22/23 oz. and 24/25 oz. of silver is. 150.
* A grain of wheat was more nearly a pound, and some of our readers will remember the old saying.—

"A pottle's pence.
All the world round."

The second line of this was certainly not true, and the first only approximately. It is a good example of the imperial system the weight, which is literally true, may be substituted.

A pint of pure water.

Weighs a pound and a quarter.

* It is not noted in the 'Pharmacopoea' that the fluid ounce, when it is an ounce avoirdupois; a preceding sentence in that work implies that medical men are never to use anything but troy weight.
of water is $62,321,006$ pounds avoirdupois. The stone is the 8th part of the hundredweight, or 14 pounds. The ton of shipping is not a weight but a measure, 42 cubic feet, hollow. At the beginning of the 17th century, heraldic terms which are made of baber/avv/avv, the word is not applied to weight, but to goods weighed. A charter of Edward I. speaks, 'de aversis pond., et de alia rebis subtilibus'; and no mention is made of avoirdupois weight. In the 17th century, Gerard Malynes, whose *Lex Mercatoria* was published in 1686, says that it serves to weigh 'all kind of grocery ware, as also butter, cheese, flesh, tallow, wax, and every other thing.' The name of *garbe*, and whereof Issach th refuse or waste.

The old merchants' pound, which was 15 ounces [Troy], may have been the origin of the modern avoirdupois pound. Fleta says everything was weighed by it except gold, silver, and drugs; but it is to be remembered that this does not mean that gold and silver were weighed by Troy weight; for it is well known that until a change was made by Henry VIII. in 1527, gold and silver were weighed by the Tower pound of 14 ounces. The modern avoirdupois pound is 14 ounces, 12 pennyweights, all but 8 grains Troy. The standards of Elizabeth agree tolerably well with this; but it is to be noticed that unless we suppose two avoirdupois pounds, one ancient, and one modern, and the latter is doubt whether the modern pound was uniform. Dr. Kelly says, 'The old commercial weight of England, which is still retained in Scotland, is about one-twelfth heavier than avoirdupois, the pound being 7890 grains troy.' This has been long the weight of a Troy ounce, 'but in Scotland a pound of 4.89 grains is now deposited. Our suspicion is this, that the old commercial pound, probably differing in different places, though supposed to be uniform, gradually gained the name of avoirdupois; and that the standards deposited in the Exchequer in the time of Elizabeth, which certainly did not agree with the arithmetical writers of the same date, were probably derived either from this old merchants' pound of 15 ounces Troy, or from a selection out of the varying specimens of a pound derived from it. In the *Pathway* the 'pound baberdupois' is 16 ounces Troy. In the legal dictionaries, every dragee 3 scruples, every scruple 20 grains; giving 7890 grains to the pound. This is the probable origin of the old pound which Dr. Kelly mentions, and it happens to contain precisely the same number of grains as the old statute 2 pounds before 32 grains took the place of 24 in the pennyweight. And this shows the origin of apothecaries' weight: medicines were dispensed by this old subdivision of the pound, and continued to be so, though the square inch had supplanted the old one. It was then natural that this ounce, drachm, and scruple, which were no aliquot parts of the new avoirdupois pound, but which were aliquot parts of the pound troy, should be referred by arithmetical writers to the old standards. We may, therefore, consider the yeor-general of the Ordinance, and hardly could have failed to be correctly informed, gives the same pound and subdivisions. Moore's *Arithmetic* was first published in 1693. Jeake, as late as 1674, gives the same division and the same pound of 7890 grains; and Harris, as late as 1724, does the same in the third edition of the *Lexicon Technicum.* Jeake gives several citations tending to show that there was no universal agreement about the pound avoirdupois, and the laws and ordinances of the time, he says, agree in making 56 lb. avoirdupois equal to 67 lb. troy (or 6942 grains to the pound), but both afterwars put 68 for 671 (which gives 6994 grains). Others, he continues, affirm the pound avoirdupois to be 14 ounces troy, and others 16 ounces. In the old writers, the older writers hardly mention avoirdupois weight: Recorde not at all, and Melliis slightly, not subdividing the ounce. Hartwell, an editor of Recorde (1648), mentions this pound and 7890 grains, divided as above, and says it

*In this case many different stone weights; one every but that of 14 pounds is now illegal.*

Abolished in 1815.

In modern times, others may lead to the suspicion that the pound of which we now speak (being that which was called avoirdupois in the sixteenth century) was not the same as that which was called *paravoit* in the *Glosseorum Deponens,* a pamphlet, asserting that the common avoirdupois was the ancient pound, and the new pound a *pound paravoit.*

The writer of books might invoke a pound for this measure, because medicines are not dispensed by pounds, but as they might cost billions, trillions, &c., named, those names being never used. But the druggists continued to buy and sell wholesale by avoirdupois weight.

P. C., No. 1705.

is used by apothecaries. Oughtred, mentioning Houghtal's pound of 6912 grains, compares it only with the English Troy pound, without mention of any other. All this shows that Oughtred was not deceived, that the old writers had a complete want of agreement as to what constituted avoirdupois weight, which continued in some degree till the end. Nevertheless in the middle of the century, Wyberd, who measured for himself, and his friend Recorde, a pound that was evidently the same as the Troy pound, to the 17 as 14 (which gives 69944 grains, agreeing with Walton and Malynes, though they say that the then common notion was that the ratio was 73 to 60 (which gives 7896 grains). They say this was a very nice experiment, but we cannot find the place, gives the ratio 175 to 144, or 6890 grains. Down to the 16th century, the avoirdupois pound varied a little, according to the notion of the writer: Dilworth makes it 69949 grains; Dr. Robert Smith, 7000 grains; Bonnycastle, 69995 grains. And even since that time it has been on the increase, and furthering to a pound avoirdupois, an editor of the last-named writer will not be obliged to the statute, but adds the 123rd part of a grain.

**Long Measure.**—Three barleycorns make an inch, 12 inches a foot, 3 feet a yard, 54 yards a pole or perch, 40 poles a furlong, 8 furlongs (1760) a mile. Also 24 inches are a foot, 3 feet a yard, 100 links, 10 chains make a furlong, and 80 such chains make a mile. The inch is sometimes divided into 12 lines (as in France), but often into tenths or eightths. On our old measures, see *League* and *Mile.* The yard is frequently called an ell in old books; *commonly,* Recorde says, that a yard and a half of one yard was divided into every 16 nails. A goad is an old name for a yard and a half. The hand (antiently hand), used in measuring the height of horses, is fixed at 4 inches by 27 Henry VIII., cap. 6. The furlong is probably a corruption of forty leagues, from its former use as a space of one league. As a large as a furlong, seems to us to carry absurdity on the face of it. The etymologists of measures are not always fortunate; Verstegan derives Troy weight from Troyviant, the mythological name for Leucon; and Jeake will have avoirdupois to be oversize, because the pound is greater than in Troy weight.

**Square Measure.**—A square perch is 303 square yards; 40 square perches are a rood (formerly also farthedeon), 40 roods make an acre, and 100 acres make a square mile. A square mile is also termed 1600 square perches, or 4840 square yards. Four square perches were antiently called a day's work. The rod is the same word as rod: Melliis says they rode make an acre. The old terms which have come down from *Domesday Book* at latest, the hide, pound, yard, perch, yard, are wholly unsettled as to what magnitudes they meant.

The cubic measure, or measures of capacity, do not immediately depend upon the cubic foot, except in the case of timber. Forty cubic feet of rough timber, or fifty feet of hewn timber, make a load.

The preceding measures have been untouched by the act which introduced the imperial measures. The old measures of capacity, the wine measure, ale and beer measure, and the dry measure, are now replaced by the imperial measure.

**Old Dry or Corn Measure.**—The gallon is 268-6 cubic inches. Two pints make a quart, two quarts a pottle, two pottles a gallon, two gallons a peck, four pecks a bushel, two bushels a strike, two strikes a hundred, and 8000 a quarter (eight bushels), 5 quarters a way or load, and

*In recent times the word perch has been almost confined to the square perch.*

To that article we may add that our conjecture relative to the computed miles, as distinguished from measured miles, namely, that the former were sometimes computed on maps, is not uncommon. On an old register of the English Grew ('Vuln. Trans.,' 1711). 'And the reason of their mistakes seems to have been reckoning only by the map; that is, by computed and not by measured miles.'

Mr. Davies Gilbert, in his evidence before the Committee on weights and measures, told the House that the experiments were two: first, as to three; observing that the money and the money weight have three denominations—penny, shilling, and pound; secondly, as to Rod or rod merely means a piece of wood much longer than it is broad or thick. So the word road commonly was used for the corn; and when Milton says that Satan, 'as he flould many a rod,' is taking the length of his hero, and not the ground which he covered.
two weys a last. In measuring grain, the bushel is struck, that is, the part which more fills the measure is selected, and so on other goods. In 1562, the pound was abolished.

...
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The Scottish liquid gallon was 833-6272 English cubic inches. Four gills made a mutchkin, 2 mutchkins a choppin, 2 chopins a pint, and eight pints a gallon. The Scotch foot was made from the extremity of a line drawn at arm's length between the heel and the tip of the middle finger; their measure, however, had been altered in 1796 into the same as that of the English foot. They had only one liquid measure; but they had two dry measures; the first for wheat, peas, beans, &c., the second for barley and oats. In the first the peck contained 533-561 English cubic inches. Four lippies made a peck, and 44 lippies, 1 pint, or 48 lippies, 1 quart, or 384 lippies, 1 English bushel. The second measure was divided in the same way, but the peck was 807-576 English cubic inches.

On the Irish measures, previous to the introduction of the imperial system, there is nothing to remark, except that the bushel and three-quarters was divided into the lime bushel 8, the malt gallon 272 cubic inches, and the liquid gallon 217-5 cubic inches. The pole was 7 yards, which made the mile equal to an English mile and three-elevenths, and the acre greater than the English acre in the proportion of 121 to 100.

We have not space to enter into the ancient history of French measures, for which the reader may consult Plucton's 'Métrie,' Paris, 1780. On the measurement of the earth, on which theprecedeSpace, see T.A.T.A.T. Ervice, p. 216. The system of measures derived from this great operation was introduced in 1795 (by the law of 18 Germinal, An III., or, to speak intelligibly, March, 1795) it being noted that the survey was then completed, but because it proved necessary and expedient to establish a single measure, the committee decided to introduce a new 'mètre provisoire' obtained from the existing surveys. The definitive metrical system was introduced in 1799, but it was found impossible to drive out the old subdivisions; accordingly, in 1812, the system was prolonged to the last subdivisions, and it is now fully established upon the metrical system; in which the measures, &c. were taken from the metrical system, and with the ancient subdivisions adapted to them. Even this was very far from entirely driving out the old system. Until 1795 a law was in force ordaining that from and after the 1st of January, 1740, no other weights nor measures should be used except those of the pure metrical system, and this law seems to have been effective. In the ancient French system the pole was 39.21770 meters, and the acre (that is, in Paris) 46.95 of the same. The toise was six feet. For the triangular measures see Mile. The arpent d'ordonnance was 1 acre, 1 rood, 2 perches (English); the arpent com- man 1 acre 7 perches, the arpent de Paris 3 roods 15 perches English. The acre de Normandie was 2 acres 2 perches. The toise de Normandie was 6.568 English toises. The English measures of liquid, the pint was less than the English quart by its 1/8th part. Two boisons made a demi-terre, 2 demi-terres made a choppin, 2 chopins a pint, 2 pintes a quarte, 4 quartes a setier, 30 setiers a muid (707.95 cubic feet) or 1 English bushel. For the English bushel, 3 boisons made a minot, 2 minots a mine, 2 mines a setier, 12 setiers a muid. The muid was 1-108 English bushels. The principal weight, called poids de marse, was the weight of 9216 French grains, or 7585 English grains; 707.95 cubic feet was the content of an English bushel. 1-108 English bushels, 32 marc a livre. The apothecaries divided the ounce into 2 duelles, the duelle into 4 siliques, and also into 6 sextules and into 8 drachms, the drachm into 3 scruples, and therefore the scruple into 12 grains.

The new system is called metrical, as derived from the measurement of the earth. Its first measure, the metre, is presumed to be the ten-millionth part of a line drawn from the pole to the equator, and is 39-0707 English inches. A Vide, see Miles. A Vide also the Uniformity of Weights and Measures in Scotland, &c., second edition, Edinburgh, 1879.

On the old Winchester gallon, already mentioned. On this work, that of Ronn de L'Ise (1799) and the anonymous 'Métrie universelle.' It is important to remark that while the authorities who have endeavored to prove the pre-existence of the system have been vitiated by the assumption that a very accurate knowledge of the earth's surface existed, from the division of the measure of the sphere into degrees, minutes and seconds, the same or a similar system of weights and measures, even those anterior to Greek and Roman times, were used. Graevus had the lead way by finding English weights and measures from the Egyptian pyramid. All persons who have ventured to cast up the table of the Egyptian weights and measures, and to compare it with those of modern times, will be impressed with the conclusion that the Egyptian system has been continued and perhaps improved. All the Egyptians were accustomed to imagine some grand and mysterious connection between existing measures and the number of the periods which they have been shown to have existed. Dr. Kelly (Camblit, l. 141) makes it 10-543 grains, for which he gives no authority. Dr. Kelly (Camblit, l. 141) makes it 10-543 grains, for which he gives no authority.

2 There is a large list of the fundamental measures of length, which are those most used, in 'Table of Chronological and Square Measures, by W. Woodhouse, (London, West, 1838).

3 We find the weights, &c. in the works from which the list of places was taken, rather different from those in Dr. Kelly's work. But the latter work is the best authority, and nothing but evidence can alter any weight or measure that has been fixed. In what concerns the English weight, it is almost in any second-rate writer to differ from it without stating why.
Colonies. Follow in general the weights and measures of the mother country, except where they have passed under other governments, in which case there is usually a mixture of the two.

Constantinople. The cheque is 4,057 grains. The okz is 2,355 pounds avoirdupois. The kilow (dry) is 7,296 gallons. The almid is 1,150 gallons. The pike is 27 inches. The measures of Turkey are very imperfectly known.

Denmark. The pound for gold and silver is 7,206 grains. The commercial pound is 1,025 pounds avoirdupois. The barrel is 3,626 bushels. The vart is 1,700 gallons. The foot, or half ell, is the Rhineford foot of 12:950 English inches. The toende of corn is 54 acres.

Florence and Leghorn. The cantaro is 150 pounds avoirdupois. The bushel is 902 bushels. The barile is 10-033 gallons. The baccio is 22-98 English inches. The accata is 1 acre 36 perches.

Frankfort. For gold and silver, the Cologne marc. The common pound is 1 lb. avoirdupois. The center is 112-25 lb. avoirdupois. The mallet is 2-375 bushels. The omm is 32-454 gallons. The foot is 11-27 inches, the ell 21-24 inches.

Genoa. The mark is 3,785 grains. The poids fort is 1,214 pounds avoirdupois; the poids faible one sixth less. The last is 3,611 bushels. The 10-9:1098 quarters is 19-1158 inches. The foot is 11-28 inches. The chefelle (quantity usually sown with a chefeff) of land is 1 acre 6 perches.

Hamburg. The Cologne marc is 3,608 grains; the pound troy is two mares. The commercial pound is 1,069 pounds. The last of 3,616 bushels. The 10-9:1092 quarters is 19-1151 inches. The foot is 11-27 inches. The chefeff (quantity usually sown with a chefeff) of land is 1 acre 6 perches.

Holand. The marc is 3,798 grains; the pound is 2 mares. The last of 3,616 bushels. The 10-9:1092 quarters is 19-1151 inches. The foot is 11-27 inches. The chefeff (quantity usually sown with a chefeff) of land is 1 acre 6 perches.

Ionian Islands. The weights and measures are mostly Venetian and Turkish.

Lubeck. For gold and silver, as at Hamburg. The commercial pound is 1,069 lb. avoirdupois. The chefeff is 192 bushels. The alm is 31-85 gallons. The foot or half ell is 11-346 inches.

Malta. The pound for gold and silver is 4,886 grains. The commercial pound is 1,743 pounds avoirdupois. The st calculated for 1,679 bushels. The foot is 11-167 inches. The canna (8 palme) is 81-9 inches.

Milan. The mark is 3,627 grains. The pound sottile is 7,306 pounds avoirdupois; the pound grosso is 1,682 pounds avoirdupois. The mozago (32 quartari) is 4-0234 bushels. The brende (12 quartari) is 13-71 gallons. The baccio is 23-42 inches. The metrical system is also introduced, with Italian names.

Naples. The pound for gold and silver is 4,950 grains. The cantaro grosso is 1,675 pounds avoirdupois. The cantaro piccino is 1,007 pounds avoirdupois. The tomolo is 1,047 bushels. The barile is 9-172 gallons. The palmo is 10-38 inches. The mozago is 3 roods 12 perches.

Netherlands. Since 1820, the French metrical system has been in use.

Portugal. The marc is 3,541-5 grains. The commercial pound is 1,0119 pounds avoirdupois. The moyo is 23-39 bushels. The almad is 3-6407 gallons. The foot is 12-944 inches.

Prussia. (New system, established 1816.) The Cologne marc is 3,600 grains; two marcas are a commercial pound, or 1,0311 pounds avoirdupois. The scheffel is 1,0116 bushels. The eimer is 15-11 gallons. The foot is 12-356 inches, the ell two-thirds of a metre. The mor is 1 acre 2 roods 21 perches.

Rome. The pound is 5,234 grains or 7,774 pounds avoirdupois. The rubbio (4 quarti) is 8-1012 bushels. The barile (32 boccali) is 12-941 gallons. The foot is 11-72 inches. The builders' canna, of 10 palms, is 67-96 inches.

Russia. There is but one pound, 9029 pounds of a pound avoirdupois. The poleb is 36 lb. avoirdupois. The chertwert is 3,709 bushels. The vetro is 2,704 gallons. The inch is 13-1 inches; the English inch is 13 inches; the foot is 13-1 inches; but the English foot is in common use. The desertina is 2 acres, 2 roods, 32 perches.

Saxony. For gold and silver, the Cologne marc. The commercial pound is 1,014 pounds avoirdupois. The Dresdin (24 schilling) is 69-85 bushels; the Leipizig wispel, 91-747 bushels. The Dresden eimer is 14-89 gallons; the Leipizig eimer 16-75 gallons. The Dresden foot is 11-14 inches; the Leipizig foot is 11-13 inches. The acre is 1 acre, 1 rood, 32 perches.

Sicily. The pound is 7 pounds avoirdupois. The cantaro grosso is 192-5 pounds avoirdupois; the cantaro wottile is 175 lb. avoirdupois. The salema grosso is 9-46 bushels; the salma generale 7-39 bushels. The salma of wine is 19-23 litres. The palm is 9-5 inches.

Smyrna. The cheque is 4,058 grains. The rottolo is 1-7295 pounds avoirdupois. The kilow is 11-3 gallons.

Spain. The Castillian marc for gold and silver is 4,800 grains. The commercial pound is 1,014 pounds avoirdupois. The fansage is 1-55 bushels. The arroba of wine is 3-338 gallons. The foot is 11-123 inches; the vara is 33-384 inches. The fanegada (for corn land) is 1 acre, 21 perches.

Sweden. The Mint marc is 3,252 grains. The commercial pound is 9,076 lb. avoirdupois. The dry tunne is 4-028 bushels; the liquid tunna is 48 kanns of 7,576 gallons each. The foot, or half-ell, is 11-694 inches. The tuneland is 2 acre, 1 rood.

United States. The weights and measures are those of England before the late alterations.

Venice. The marc for gold and silver is 3,601-5 grains. The pound peso grosso is 1,0818 lb. avoirdupois. The pound peso tostillo is 664 pounds avoirdupois. The stop 2 bushels. The anfora is 114-1 gallons. The braecco for woollen is 26-61 inches; for silk, 24-8 inches. The foot is 13-68 inches.

We now proceed to the weights and measures of the different nations, taking first the relations of the various denominations to one another, and afterwards the fundamental comparisons of their values with the modern weights and measures.

The Romans had a mode of dividing the as or libra which they transferred upon occasion to any unit. The whole, whether an as or anything else, consisted of twelve unciae, so that the uncia became little more than a name for the twelfth part. The division stood thus—

1 uncia was Sesiuncula, or Sesiuncx.
2 Sextans (a sixth),
3 Quadrans (a fourth), or Teruncia.
4 (a third),
5 Quin uncia.
6 Semis, or Semiss (a half).
7 Sept uncia.
8 Bess, or Bessia.
9 Dodrans.
10 Dextans, or Denticulae.
11 Decuns.

The libra of weight was thus subdivided:—3 siliquae, one obolus; 2 oboli, one scrupulum; 4 scrupliculae, one sex quinaria; 6 sex quinariae; 8 scrupliculae; 8 scrupliculae, one duella; 3 duellae, one uncia; 12 unciae, one uncia. In later times, the uncia was divided into 8 drachmae or 3 scrupula each. This mode of dividing an integer into 288 scrupula runs through other branches of their system, and is also used in modern postal weights in a unit. The obolus in the preceding system rather belongs to a later period in which the Greek divisions were introduced, the ounce being made 8 drachmata of 3 scrupula or 6 oboli each. The uncia appears as ὀβρια in the later Greek writers.

The length of the pes, or foot, was divided not only into 12 unciae, but also into 16 digits. In such Roman foot-rules as have been found, all have the digital division, some both, but none the uncial without the digital. And 4 digits are one palma; 4 palmi, one pes; 16 pedes, one palmine; 16 pedes, one cubitus; 24 pedes, one gradus; 2 gradus, or 5 pedes, one pasma; 2 pasma,
The following measures are identical in pairs, if the *mēter* be two amphorae:—The χερις and the congius; the *eisarix* and the sextarius; the *kēlyx* and the hemina; the *kryptos* and the quartarius; the *pēllēn* and the acuta.

All the Greek measures above given are Attic: there are some variations of description which, if not erroneous, probably belong to other parts of Greece. It is customary to divide the Greek measures into two collections, without any attempt to distinguish at what times, at which places, and by whom they were in use; so that Homer and Athenaeus, or Herodotus and Galen, may appear as authorities in the same set. There are many other names of measures noted by different writers, some of which, in the explanation of some of the above mentioned, and of others it may be doubted whether they were really names of recognised measures. If the writers of our day were compared in isolated passages as closely as those of the antients, we might probably have a great many new names made for us of which we know nothing: the shells which the grocers used would have good chance of a permanent establishment, and their paper bags could not possibly escape.

The Hebrew measures, though tolerably well settled in their proportions, are very imperfectly known as to their absolute magnitudes. We shall only give here the usual summary, and shall then give some account of the mode of determining the actual magnitude of the Greek and Roman measures, to which the Hebrew measures, much have the subject received so much discussion.

The cubit was about 22 inches; four digits make one palm; three palms, or one hand, make one cubit; one hand; or one palm, make one digit; one foot; or 4 digits, make one span; 2 spans, or 8 digits, make one foot; 3 palms, or 12 digits, make one palm; 6 palms, or 24 digits, make one cubit; 6 cubits, or 12 palms, make one rod (Kaneh); 8 cubits, or 1 pole (Arabian); 90 cubits, or one measuring-line; 440 cubits, one stadium; 5 stadia, a Sabbath day’s journey; 10 stadia, a mile; 24 miles, a day’s journey.

In liquid measures, the bath, or ball, of about 44 im perial gallons, is thus divided:—Four logs make one cald; 3 cald, one hin; 2 hins, one seah; 3 seahs, one ephah. The ephah is three-fourths of the log. For dry measures, the bath, or ball, of about 16 cubic span, which is a foot, and ephahs, 5 ephahs make one letech; 2 letech, one Chomer, or Homer: the homer is the tenth of the seah.

For weight, 60 shekels make one maneh; 50 maneh, one talent of 85-97 pounds avdpurdous.

We now come to the comparison of the Greek and Roman measures with our own. The Roman foot, the most important of all, has been determined in the following ways:—1. By feet laid down on sepulchral monuments. 2. By foot-rules obtained in the ruins of Rome and elsewhere. 3. By the distance of ancient distances, such as the distance of places. 5. By specimens of the congius. 6. By some obelisks. 7. By the dimensions of buildings. The results are given in lines of 144 to the Parisian foot, and in some dissertations on this subject, the great use of the line, it will be convenient to give a table of its multiples in terms of the English inch.

<table>
<thead>
<tr>
<th>One line (4 inch French)</th>
<th>0.6881378 English inches</th>
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<tbody>
<tr>
<td>2 lines</td>
<td>1.3762756</td>
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<tr>
<td>3 lines</td>
<td>2.0644134</td>
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<tr>
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<td>2.7525512</td>
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<td>8 lines</td>
<td>5.5051084</td>
</tr>
<tr>
<td>9 lines</td>
<td>6.1932492</td>
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</tbody>
</table>

The sepulchral feet are:—1, that marked on the tomb of one Statius, E* found in the Vatican garden in the sixteenth century; 2, the measure on the tomb of Cossutius (Vitruvius mentions an architect of that name), dug up in the garden of Angelo Colozzi before 1510; 3, that on the

* The *actius* is described as the length of a furrow. If our furrow had been (as some would suppose) a furrow long, it would have been nearer to the original amount of one palm and one cubit.

* The term *quadrans* seems to have applied to cubes as well as squares.

* This word is translated in two of the gospels (Mark, xiv. 3; Luke, vii. 37).
tomb of M. Philius; 4. that on a monument without inscrip-
tion, given by the Marquis Capponi to the Capitoline
Museum at Rome. Taking the means of such trustworthy
measures as have been made of these different feet, it
appears that the Statilian foot is 131-17 Paris lines; the
Cossian, or Colonian, 130-53 lines; the Capponian 131-14
lines; and the Capponian 130-80 lines.
The first foot-rule was measured by Lucas Petrus, 'De
Mensuris et Ponderibus Romanis et Graecis,' Venice, 1573,
who found three of them agreeing with each other as far as
his inspection went. On inspecting them more closely it
caused to be engraved on stone and placed in the Capi-
toline Museum. This was called the Capitoline foot, and
was frequently regarded as conclusive. Petrus himself
makes the foot-rule of a massive line, and he there-
fore supposes either that his measures are too short or that
the standard to which he referred them has been mistaken;
for others take his own Capitoline foot to be 130-5 lines.
Two other foot-rules give 128-75 and 130-03 lines. There
was a papyrus column at Rome (now lost) marked 60
which was certainly meant for nine Roman feet. An
editor of Vitruvius, Philander (1552), makes the Roman
foot to be, from this column, 131-63 lines; but Petrus
makes it only 130-03. Other foot-rules have been made
to be 130-19, 131-96, 131-27, and 130-51 lines. Some of these are
different measures of the same rule.
Very few consecutive milestones have been found from
which to deduce the foot. From one mile in the Appian
way, and from two different ones between Nimes and
Boulogne, it has been deduced that the distance is 1324-44,
129-42, 129-05, 129-31, and 129-65 lines. D'Anville, from a
collection of such measures, fixes it at 130-8 lines.
A specimen of the conquis is yet remaining, which, by
an inscription, is declared to have been placed in the Ca-
pitol by an ambassador of the Pharaohs as a standard of
the eighth part of the amphora, or cubic foot. By ascertaining
the weight of water which this contains, the foot was esti-
mated by various observers at 131-13, 133-21, and 132-44
lines. From the length of the foot drawn upon the con-
guis, certain columns at Rome (now lost) give 128-75
another conquis preserved at Paris, Austout found 134-16
lines for the Roman foot.
There are two obelisks at Rome, which were brought
by Augustus from Heliopolis. Pliny gives the height of
the taller one, but the height of the lower, the defect of the lower from it. Measurement proves that, with respect to the higher, the number of Pliny must be cor-
rect; but from his difference between the two, as compared with the measured difference, the Roman foot is 131-9 lines.
The method of ascertaining the foot by buildings is as
follows:—Any remarkable length, such as that of the whole
front of a building, being known nearly in Roman feet, is
prefixed to all these data, the number of feet which it must be
nearly. This supposes that the Roman architects were
in the habit of choosing exact numbers of feet when there
was no particular reason for breaking a foot. Raper (Phil.
Trans., 1760) proceeds in the manner of the following
instance:—He found the distances between the columns in the temple of Fortuna virilis to be 9'106 English feet. If this be an exact number of Roman feet, it
must be 10; we know enough beforehand of the Roman foot
to say it cannot be 9 or 11. Consequently, if the distances between these columns, which were not more than 10 feet, the foot must be 9'106 English feet. By processes of this sort, Greaves found 131-50 lines, La Hire 131-0 and 132-4, La Condamine 130-9, Jacquier 131-08 and 131-14. Raper, who went more into the subject, and found the distances of two columns, 131-14, 130-80, 131-62, 131-11, 131-16, 131-05, 131-16, 130-05, and 131-15 for the mean. Wurm, from the Verona amphitheatre, adds 131-12. Raper thought he observed that the buildings which were the first of Titus and some of their predecessors: from instances he gets 130-75, 130-33, 130-34, with a mean of 130-34. He refers the change to the destruction of the Capitol (where the standards were kept) in the time of Vitellius.
But a Raper's average, adopted by Wurm, is 131-15 French lines for the ancient foot, or 11-645 Eng-
lish inches, or 971 English feet. But Sir G. Shawclulgh
made a careful review of the three best modes of obtaining
the required result, namely, rules, buildings, and tombs,
and obtained 972-78, 981-61, 996-9 of a foot English. (Young's
Lectures, ii, 153.) The mean of these is 990-83 feet, or
11-196 inches. Again, if we take a mean of the results
given by others, namely, Bernard, 970, Picard and Greaves
967, Folkes, 986, Raper, 970, we have also 993-8. We
take then the Roman foot at 11-62 English inches, which
is represented fairly within the probable limits of error
by the mean of the other foot-rules. In the 17th and
18th centuries we are well aware that eminent authorities of late years prefer
11-65 inches for the Roman foot, but we like to keep as
near to the foot-rules as we can, consistently with giving
a fair standard. We are as well aware that 11-62 and
11-65 cannot be settled by authority, but must be
decided by closer approximation than has yet been made
of the probabilities of the different methods.
The Roman measures of length may thus be considered,
we fully believe, to be as well known to us as they were to
themselves. The same cannot be said of the measures of
weight. All writers agree that the amphora, or cubic foot,
weighs 80 pounds of wine; but it is also said that they
considered wine to be of the same weight as water. We
cannot venture to say how many amphorae make up some
of the specific gravities of their wines; those of our own vary from 0-99 to 1-04, water
being taken as 1. But there is one very obvious consider-
ation which, we believe, has escaped notice. No metro-
logist has given the Romans credit for seeing that water,
which is density as it is weight 1603/1000, could be measured
as weight by means of specific gravities of different
wines; those of our own vary from 0-99 to 1-04, water
being taken as 1. There is one very obvious consid-
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wines; those of our own vary from 0-99 to 1-04, water
being taken as 1.
give as a mean 136-69 Paris lines, or 12-14 English inches. We may therefore say that the Greek foot was longer than the English one by the tenth part of an inch. The statements then as to the relations between the Greek and Roman measures appear to have been tolerably exact, and our knowledge of the relations between our measures and theirs, at least in regard to their comparisons, is abundantly exact for the purposes of the classical student, far more so than could have been expected to have been attainable by those who remember that for a long period all means of comparison were lost.*

The palace of the grand-duchy of Saxony—Weimar-Eisenach is situated in 51° N. lat. and 11° 20' E. long., on the bank of the river Ilm. It stands in a pleasant valley, with a wooded mountain to the north and low hills to the south and east, and a long, winding course of the river runs along the south side of the town. Weimar is one of the most remarkable towns in Germany—illustrious in the annals of German literature by the names of Goethe, Herder, Schiller, Wieland, Kotzebue, and others. It is an open town with regular streets, there are however many agreeable houses, but the general appearance is plain and rather antique. The palace is beautifully situated, and the interior is fitted up with great elegance and taste. The adjoining park would be an ornament to any country. The grounds are surrounded by the housework, the hospital, the library, the new mews, and the two churches, but none of them is at all distinguished by architecture. The Court Theatre was built in 1822, and, under the management of Goethe and Schiller, has, by the means of its financial and grandeur, contributed to improve the public taste. The grand-ducal library contains above 130,000 volumes, besides manuscripts, copper-plates, and drawings. The principal church deserves mention. In 1764, during the reign of Anna, and being adorned with several fine paintings by Lucas Kranach, particularly the altar-piece, representing the Crucifixion. The public institutions are useful and well managed. Weimar has a much-frequented gymnasium, but its chief glory is that it contains the Royal Library, which was opened in 1792, and contains 100,000 volumes. The museum, the chapel, the house of correction, an orphan asylum, a benevolent ladies' institution, under the patronage of the grand-duches, which is connected with 31 towns, and has 2500 girls instructed in female work, all over the kingdom. The establishment for destitute children was converted by the grand-duke, in 1820, into a public school for education by the name of Falck's Institution. A private establishment connected with the study of geography deserves notice, being perhaps the most extensive of the kind in Germany. It publishes maps, charts, globes, geographical works, and periodicals in great numbers. The inhabitants, now about 12,000, are of the Lutheran religion. The Roman Catholics and Jews, who are about 1000 and 500 respectively, (Catholics and no Jews), have a chapel and synagogue. There is also a chapel of the Russian Greek religion, erected for the grand-duches Maria Pavlowna, sister of the emperors Alexander and Nicholas. There are some manufactures, but they are of small importance: the inhabitants derive their chief support from the residence of the court. About two miles and a half from the town is the country-seat Belvedere, situated on a hill and surrounded with a park. There is a fine avenue from the town to this seat. [Eisenach; Saxe-Weimar-Eisenach.]

(Brockhaus, Conversations Lexicon; Hassel, Handbuch; Stein, Lexicon.)

WEIBRENNER, FRIEDRICH, one of the most eminent German architects of his time, not only on account of the numerous edifices erected and professional works published by him, but for his extensive influence as the founder of a better school of the art, was born November 9th, 1766, at Carlsruhe in Hanover, of a Protestant family (Calvinists and no Jews), and where he himself afterwards found scope for the display of his talents in the erection of a great number of both public and private edifices. Losing his father before his future destination was fixed, his studies were rather solitary, and he was left chiefly to his own impulses, directed only by the advice of his brother, who was some years older than himself. Having obtained from him sufficient insight into matters of practical routine, Weibrenner commenced his artistical Werkejahre in the spring of 1798, and set out for Zurich, where he remained a considerable time, in consequence of being engaged to superintend some timber constructions. Agreeable as his studies were, he found the acquaintances he formed with several artists and literary men—among the latter Lavater—he hastened as soon as his engagements would permit to Vienna, and after examining the architectural monuments of that capital, he proceeded to Kranach, where he had the advantage of the extent of his travels, but in Berlin he became acquainted with the brothers Genelli, architects of considerable repute and talent, who urged him to visit Italy. Their advice was seconded by Weibrenner's inclination, that though he had not been led to form such a scheme for himself, he resolved to adopt it, and accordingly set out for Rome, in June, 1792, in company with Carstens (Carstens) and another young artist named Cabot.

When the first tumultuous transport excited by the view of Rome and its monuments of art had somewhat subsided, Weibrenner felt, if not disheartened, most anxiously conscious that, in order to prove a profitable one, the study he had commenced imposed upon himself. He began to reflect what a task it would be, not only to provide for his immediate wants, which he did by giving instruction in architecture. Many strangers of distinction then at Rome took lessons of him, and among the rest was the late Henry Julius, Duke of Carlsruhe, who had been converted to Protestantism, and in Carlsruhe, he found a very promising opening for his talents. Besides being almost immediately appointed 'Bau-inspector,' he had early opportunities of displaying his professional ability in the erection of the new synagogues and one or two private mansions. Notwithstanding this favourable commencement, he gave up his appointment two years afterwards, and went to settle at Strasburg, where his wife's relations (Margaretha Arnold, whom he had shortly before married) resided, and were studied by them artists. The change however proved an important one: Strasburg became meagre by hostilities, and he found himself without other occupation or resource than teaching a few pupils. At this juncture he was invited by a gentleman, through the interest of Prince Augustus, to inspect and improve the prisons of that country. Very advantageous offers were made him to remain there, but instead of closing with them at once, he requested that he might be allowed to postpone his decision for a twelvemonth. In the interim he returned to Strasburg, and was dissuaded by his wife and her family from accepting the proposal. Fortunately he had an alternative, for he was again invited to accept his former appointment at Carlsruhe, and though the immediate returns were not considerable—not above a quarter of what he would have had at Hanover—some favourable conditions were annexed to it, and there seemed to be upon the whole a fairer prospect of his signalizing himself in this professional. He had already made up his mind that the choice of the chance, for from that period he was continually employed on various improvements and embellishments in the capital of Baden and other parts of the territory. At Carlsruhe alone he erected many buildings, especially the town-hall, the public church, the prison, the theatre, Rüttinger gate, Standeshaus, museum, mint, Hochberg palace; and at Baden the Conversations-haus or assembly-rooms, baths, and 'Antiquitaten-halle,' or museum, &c., besides the Leopold summer residence, and various other mansions, villas, &c. erected or designed by him in other places within the territory of Baden, the number is very considerable; nor are there a few by him in various other parts of Germany—Leipzig, Strasburg, Göttingen, and Jena. Being so numerous, his works display various de

* For further information on ancient weights, coins, and measures, the reader is referred to the following work: Metroglogische Unterruchungen über Gewichte, Münzformen, und Messe des Althoomers in ihrem Zusammenhang, von August Boeckh, Berlin, 1830; and to a review of this work in the Classical Museum, no. 1, by Mr. Grove.
degrees of merit according to the respective or fortunes of the past, but taken collectively, they manifest the improvement in style, with individuality of character, and fresh and masterly combinations, instead of the mere routine of design. He applied himself to his art with higher views of it than were then entertained among his countrymen, and diffused a similar feeling for it through the next generation of the profession, having reared up to it a great number of those who now rank high among the living architects of Germany. Nor was his instruction confined to them exclusively, for he published a variety of treatises, articles, and books; among other publications, two on the orders of architecture, 'Zeichnungsliebe,' 1810; 'Optik,' 1811; 'Perspektiveliebe,' 1817-24; 'Über Form und Schönheit,' 1819; 'Über Architektonische Verzierungen,' 1820-23, &c. &c. besides a work on architectural and ornamental topics in the 'Morgenblatt' and other literary journals. Though varied, his application to his professional pursuits and studies continued uninterrupted almost to the very last; for although his health began to be impaired some time before, he was taken off somewhat suddenly, March 1st, 1826, after enjoying the society of some friends on the preceding evening.

(Friedrich Weinbrenner, von Aloys Schreiber.)

WEINMANNIA, a genus of plants belonging to the natural order Cunoniaceae, and named in honour of John William Weinmann, an apothecary at Ratisbon, and author of the 'Phyntanthora Iconographia,' in four volumes.

The species are trees, and natives of South America and the Malay Archipelago. They are characterized by compound, ovate leaves, flowers in terminal panicles, and ovate, shallow, membranous calyx. The calyx is usually four- or five-lobed; the petals 4; stamens 8; and the fruit a many-seeded capsule. The flowers of the species are roundish and reniform. There are about 40 species of this genus described. The W. tintoria is a native of the Isle of Bourbon; it has leaves with many pairs of leaflets, which are oblong, serrated, and smooth-edged; the flowers are some, greenish, and multiflorous, crowded on thick, slender peduncles. The seed is roundish and reniform. This tree is called by the natives of Bourbon, Tan rouge, and is used for dyeing a red colour. Most of the species of Weinmannia possess aromatic properties, and may be used for dyeing. On this account they are also often employed in Peru to adulterate the various species of Cinchona bars which are collected for medicinal purposes. The species of Weinmannia may be easily cultivated by growing them in any rich light soil, but they do not grow in thick woods, and are only seen in this country in botanical collections.

WEIR, or WEAR, is a dam erected across a river, either for the purpose of taking fish, of conveying a stream to a mill, or of maintaining the water at the level required for the mills.

The erection of weirs across public rivers was a practice reprobated from the earliest periods of the English law, and was considered as a public nuisance. Magna Charta (c. 23) directs that all weirs for the taking of fish should be put down except on the sea-coast. By the 12 Edw. IV., c. 7, and other subsequent acts, weirs were treated as public nuisances, and it was forbidden to erect new weirs, or to enhance, straighten, or enlarge those which had aforetime existed. Hence, when a breach of weir across a river had been converted into a stone one, whereby the fish were prevented from passing except in flood-time, and the plaintiff's fishery was injured, this was considered to be a public nuisance, although two-thirds of the weir had been so converted without interruption for upwards of forty years. And it was laid down in that and other cases, that though a twenty years' acquiescence might bind parties whose private rights only were affected, yet that no length of time can extinguish public rights or legal duties. See Smith's 'Pract. of Eq.' p. 1566; Giffard v. Alds. 662.) On the same grounds it will probably be held that the Prescription Act (2 and 3 Wm. IV., c. 71) does not apply to weirs. It appears therefore that no weirs can be maintained in an interference of the rights of the public, or even, as it seems, of individuals, except such as have existed time out of mind, or such as have been erected under local acts of parliament for the navigation of particular rivers.

WEISSE, CHRISTIAN FELIX, was born on the 8th of February (28th of January, Old Style), 1729, at Anna-
berg, in the present kingdom of Saxony. His father, Christian Heinrich Weisse, was a member of the public grammar-school at Annaberg, and from 1727 directed the gymnasium at Altenburg, was a distinguished scholar, whose works, 'De Stylo Romano,' and 'Latium in Compendio,' were much esteemed in their time. Young Weisse lost his father at an early age, and, having finished his preparatory studies in the gymnasium at Altenburg, he went to the university of Leipzig in 1745, where he studied the classical languages and antiquities under Ernesti. At Leipzig he became acquainted with Lessing, who directed the 'Theater,' and having there given the 'Burleith,' and the 'Lieder von Ephesus,' till 1767. In this year he published 'Die Befreiung von Theben' ('The Deliver of Thebes'), which was his first drama written in blank verse. He felt that the Alexandrine, in which the German dramas were generally written, were, among other causes, the chief foes of the German school, the worst of all, and the principal cause of the tedious monotonous of the dialogue. When he abandoned this verse at the suggestion of Lessing, and adopted the blank verse of the English drama, he was enabled to do it, as he thought, at a single blow. The 'Rheinische Morgenblatt' says: 'Weisse was thoroughly able to conceive any great passion; for each passion he had one mould, such as the character of Nero, of Alexander, of Medea: he was unable to depict the same passion with any variety, and the only difference between his dramas is their tone. Weisse was thoroughly and almost a mere poet: he was thoroughly the tragedian; he was thoroughly the man of genius, and he was thoroughly the poet. Weisse was himself in the theatre of the world; he had no periods, and he had no scenes. He was himself a whole mass, he was himself an entire passions. He was himself the representation of the character; and when he entered a stage, it was entered with the character; and when he left the stage, it was left with the character.'
amusements of the children, their education, the various branches of their instruction, and their amusements, are described: a great number of tales are introduced, which they are supposed to tell to one another; and several little comedies, which the members of the family perform for the entertainment of their friends. From 1775 to 1782 the "Kinder-Freund" went through five editions, among which two are in twenty-four volumes, and three in twelve. The "Kinder-Freund" was continued in the "Briefwechsel der Familie des Kinderfreundes," 12 vols. 8vo., Leipzig, 1783-88. Lippert, for reputation, "Kinder-freund," to two parts a translation. There is a large biographies, and in several parts a translation. Weisse's works for children have not been translated either entirely or in extracts or abridgments. Weisse's literary activity was immense, and lasted till his death, although by a fall from a ladder in his library, in 1792, he almost lost the use of his hand, and was obliged to dictate. He published many translations from the English, especially works for the use of children and young persons of both sexes, such as the works, or parts of the works of Richardson, Law, Moore (the Fables), James Fordyce, Brooke, Scudéry, and others, in a very pretty and even beautiful style, as of Dryden, Pope, Congreve, and many other works. The reputation of Weisse from the time that he began to write for children was very great. However in all his works on education there are indications that the author's system was rather a continuation of the teachings of Rousseau and Voltaire than the formation of his character. His real merit is nevertheless great. Though unable to throw off the false rules of a taste in which he had been brought up, he was an enlightened man, of extensive knowledge, and a good judge of things. Of late he has often been severely criticised, but his contemporaries held him in high esteem. Wieland dedicated to him his "Musurion;" Thimmel, his "Inoculation der Liebe;" Gerbelberg, his "Die Braut;" Rastatt, his "Der Teufel," a work in 1801, and his "Schadet und Nutzen," a work in 1808. Dyk, whose "Essays on the Character of Zollikofer," and the second volume of his "Versuche über Gegenstande der Moral und Literatur;" Teller, his "Darstellung der Sprache in Luther's Bibel-Uebersetzung;" and Eichstädt, his "Verhandlungen der deutschen Literatur," dedicated themselves to Weisse for the revision of his works: as Winckelmann for his "Geschichte der Kunst des Alterthums;" and "Ueber die Baukunst der Alten;" Hagedorn, for his "Betrachtungen über die Malerei;" Lippert, for his "Betrachtungen über die Malerei;" Berlin, a medal in memory of Weisse, for which Frisch made the design and Ramler wrote the inscription.

Weisse died on the 18th of December, 1804. The principal editions of his works are: 1st ed. Leipzig; 3rd ed. Leipzig; 1st vol., 3rd ed., 1771; 2nd vol., 2nd ed., 1767; 3rd vol., 2nd ed., 1768; 4th vol., 2nd ed., 1769; 5th vol., 2nd ed., 1769; 2, Trauerspiele, 5 vols. 8vo., Leipzig, 1776-80. Several of his tragedies were published separately, as his "Der Teufel ist los, 1st part, 1770, 2nd part, under the title 'Der lustige Schuster, oder Der Teufel ist los,' 1771, fol., &c.; 5, 'Kleine Lyrische Gedichte,' Leipzig, 1772, sm. 8vo.; the songs for children are contained in the "Kinder-Freund;" in the "Kinderfamilie," edited by the "Geschichte der Schönheit des Freundschafts," 12 vols. 8vo., each containing 2 parts, 1790-76. This work was very important for the literary history and the biography of the scholars and writers of Germany, and was published in Europe. During his residence in the eighteenth century. A catalogue of the biographies and articles contained therein was published at Leipzig in 1767. Weisse, as already observed, was the editor of this work from 1760; his editorship began with the fifth volume. The number of his contributions is very great; his criticism of Wieland's translation of Shakspeare is remarkable. The work was continued under the title, "Neue Bibliothek der Schönen Wissenschaften und freien Künste," 72 vols., Leipzig, 1756-1806; the latter part of which was edited by Weisse and Dyk, the learned publisher of the work, who, after the death of Weisse, was the sole editor. The "Bibliothek der redenden und bildenden Künste" is a continuation of the "Neue Bibliothek," &c.

A complete catalogue of Weisse's works and other literary productions is given by Jürgens. In 1830 a school for girls was established, for the children under the name of Weisse's-Stiftung (Weisse's Institute). Weisse was married to a sister of the celebrated philosopher Platten.

Some further biographies: Ebner, who was born in 1765, became professor of feudal law, and afterward of law at Prague. He died in 1832. He was a distinguished jurist; consult the old historical school, but was unable to keep pace with the ideas of the nineteenth century. His principal works are: 1, "Geschichte der Kur-Sächsischen Staaten," 4 vols. 8vo., Leipzig, 1802-6, the continuation of which is, 2, "Neueste Geschichte des Königreichs Sachsen seit dem Frieden_Plattner;" 3, "Museum für sächsische Geschichte, Literatur, und Staats-Kunde," 3 vols. 8vo., Leipzig, 1794-96; the continuation of this work is, 4, "Theatrum Saxonum," 5 vols. 8vo., Leipzig, 1792-93, an excellent collection of documents and other materials for the history of Saxony. 5, "Lehrbuch des Sächsischen Staatsrechts," 2 vols. 8vo., Leipzig, 1809.


Weissenfels is a garrison town, has 4 gates and 4 suburbs, and on a rock outside of the walls stands a large castle, now converted into barracks. In the convent church, which is no longer used, are deposited the remains of several princes, and also those of the great Gustavus Adolphus, king of Sweden, who fell in the battle of Lützen, Nov. 6, 1632.

"Müller, "Wörterbuch des Preussischen Staates;" Hassel, "Die Preussische Monarchie" (in his Handbuch).

WELDON, JOHN, one of our most eminent composers of cathedral music, was born at Chichester, and studied his art under the famous Henry Purcell. At an early age he became organist of New College, Oxford; in 1749, he succeeded gentlema...
The friend of the composer is mainly built on his anthems; 'In Thee, O Lord,' and 'Hear my crying,' of which Hawkins justly observed, 'it is difficult to say whether the melody or the harmony of each is its greatest excellence.' Dr. Burney speaks slightingly of Weldon's powers; and it is probable that on this subject he was either prejudiced, or interfered and associated with the works of others not so critically.

Weldon died in 1736, and was succeeded in the chancelroy by Dr. Boylee. (Harmonicoxi, xi. 117.)

WELLS, WELLESLEY, RICHARD COLLEY, MARQUESSE OF

The first act of the young Lord Mornington, on attaining his majority, was to assume the numerous pecuniary obligations of his father, and place his fortune under the management of his mother. Encouraged by the reputation he had acquired with his teachers and schoolfellows, he selected political pursuits as the means of starting him in a career which would enable him to render himself useful to the family. With this view he took his seat in the Irish House of Lords, as soon as he had come of age, and continued a member of that body till the Union. This proved however too narrow a theatre for his abilities or his ambition. He kept up the English connections which he had formed during the time of his education, and having been returned a member of the British House of Commons by the borough of Bealston, became a frequent visitor in London. On his first opportunity he had of attracting substantial notice occurred during the regency debates of 1789. The British Houses of Parliament, on the illness of George III., proposed that the Prince of Wales should assume the office of regent subject to certain conditions or restrictions, which the House of Commons declared should be unrestricted. The earl of Mornington strenuously supported restrictions in the Irish House of Lords, maintaining that the full powers of the crown should not be assumed by any one during what might prove a temporary interregnum of the British throne. These views, which coincided exactly with those of George III., induced the king, whose attention, after his recovery, had been called to the minorities in the Irish Houses of Parliament, to take as his guide the young statesman. He found the toils of one legislative body too little for his activity. At the next general election the earl of Mornington was returned for the borough of Windsor, sworn in a member of the Irish privy council, and elected one of the knights of St. Patrick.

He was soon after appointed one of the lords of the treasury, and in 1793 he was sworn in a member of the British privy council. He continued to make such steady progress in the favour of the king and the confidence of the minister, that he was nominated to succeed Lord Cornwallis in the government of the East India Company at this time to the British people by the title of Baron Mornington. The marquises which he subsequently received was merely an Irish title. As a British peer he was never raised to a higher rank than that of baron.

He was placed in the government of India on the 4th of October, 1779; he reached the Ganges in May, 1789, after touching at the Cape of Good Hope and the Isle of France by the way, having some time before been preceded by his brother, Colonel Arthur Wellesley, which displayed the high condition of Saipan. He retained the supreme command in India till August, 1805, when he embarked to return to Europe.

The governor-generalship of the earl of Mornington, or, to use the title by which he is best known, the governor-generalship, was the occasion of the government of the east India Company and the new circumstances which were forced the Nizam to disband his French troops; the next was to open negotiations with Tippoo, in order to detach him from the French alliance. Failing in this, and having detected Tippoo's negotiations with France, the English armies were made by the Indian government to organize the Native and improve the British troops. With his characteristic promptitude of decision, the governor-general resolved to strike home at once. Warlike operations commenced with the victory of Brillant, which displayed the high condition of Anglo-Indian army. Following up this impression, General (afterwards Lord) Harris was ordered to invest Serings-patam, which, after a siege of a month, was taken by assault, and the Sultan slain. His territories were partitioned. The capital with the principal towns, including the fort of Mangalore, was retained for the East India Company; compensation was made to some native allies; and the remainder of Tippoo's territories, with the nominal sovereignty over the whole, was restored to him in the presence of the victorious army, as a child of five years of age. So complete was the effect of these victories and the subsequent arrangements in impressing the minds of the natives with a sense of the strength and resources of the Anglo-Indian government, that General Wellesley (in one of the works published by Colonel Gurwood) writes to his brother, that he only waits to know what countries they are which the governor-general wishes to take possession of.

The next efforts of Lord Wellesley were directed to the extension of the commercial intercourse of India, and to the commencement of those important financial reforms which eventually raised the revenue of the Company from seven millions to upwards of fifteen millions annually, envied by no one, and to communicate intelligence to the inhabitants. His projected extension of the commerce of India was in part thwarted by the monopolist spirit which at that time prevailed among the directors of the East India Company. Nowise cooled in his zeal by this disappointment, he prepared a scheme of the reorganization of the British empire in Asia, and to establish it on a broader basis. With this view he undertook a vice-regal progress through the northern provinces, visiting the native princes with a pomp equal to their own, redressing grievances, checking enemies, and conferring favours upon the inhabitants.

In 1801 he was again involved in warlike operations. He in that year despatched a considerable force up the Red Sea to assist in wresting Egypt from the power of France. He next turned the British arms against the Morbucks, and, after a severe struggle, conquered the whole country between the Jumna and the Ganges, and compelled Scindiah and the Rajah of Berar to make
peace. Sir Arthur Wellesley's victory of Assaye and the crowning battle of Lascarswaran terminated a war directed with an energy and fertility of resources that gave good and true augury of the future career of the commanding officer on a more important and conspicuous field. Without undervaluing the political wisdom of the Marquess Wellesley, it may safely be said that he had not possessed so able a general as his brother, the result of the war might have been less favourable; and that, had it been less favourable, his policy would have been judged of very differently from what it has been.

After six years' service in India, the Marquess Wellesley became desirous of returning to England. Such however was the estimation in which his services were held at home, that some years elapsed before he pronounced his intentions to apprise them of his intention to obtain the release he solicited. At last he was allowed, in 1805, to resign the government of India, and he embarked for Europe in the month of August. He was received with every demonstration of respect and approbation by the government and the East India Company. Complaints were indeed heard that his administration had been unwarrantably expensive, and that he had been guilty of oppression towards the native powers, especially the Nabob of Oude. Articles of impeachment were presented against him by the House of Commons, but he resisted the charge, and was acquitted. The charge was that he had procured the death of Mr. Paull. But the judgment of the public then (and the time which has since elapsed, with all its gradual disclosures, has only confirmed that judgment) was, that without adopting all the exaggerated eulogies of the partizans of the Marquess of Wellesley, the circumstances of our Eastern empire, the wisest and most just that could have been adopted. His government marks the commencement of a better era of English rule in India.

The Marquess Wellesley on his return from India again took part in the proceedings of parliament. He had no great sympathy with the opposition; that could scarcely be expected from one who might almost be regarded as the first one of all who were interested in the welfare of a strenuous supporter of Mr. Perceval's government, or even, at a subsequent period, of Lord Liverpool's. The Pitt party had been disorganized by his death at the time that Lord Wellesley returned from India, and it was not again consolidated until Lord Liverpool was placed at the head of affairs. Besides, the Marquess's position as governor of a distinct empire, and his protracted absence from England, had impressed him with a feeling of personal consequence which ill qualified him to perform a subordinate part. He perceived that his views were at variance with those of his brother, and to a great extent emancipated his mind from the mere party contaminations of this country. He so far concurred with the general policy of administration that he was a zealous advocate of the war against Bonaparte which were destined to muzzle with narrow-minded and oppressive views in home politics; although, bred under Mr. Pitt and matured in India, he cared little for the constitutional views which were then popular.

In 1807 Lord Wellesley evaded the argury of the king, who wished him to become a secretary of state in the duke of Portland's cabinet. In 1808 he rendered ministers efficient service by his vindication of the expedition to Copenhagen. He was soon after advanced to the ambassadorship to Spain. A short residence in Spain convinced him that, if Bonaparte were to be driven out of the Peninsula, it must be by Britain ceasing to play the part of a mere auxiliary, and taking the lead in the war. On the death of the duke of Portland, he was appointed lord-lieutenant of Ireland, and was supported by the king to accept the appointment of secretary of state for foreign affairs with Mr. Perceval. He held his office from December, 1809, till January, 1812, when he resigned on account of the difference of opinion existing among the cabinet on different points, especially respecting the Roman Catholic claims and the inefficient conduct of the war.

After the assassination of Mr. Perceval, in May, 1812, Lord Wellesley undertook, at the request of the king, to form a new cabinet. Such a task is alike difficult and unprofitable; when party distinctions are becoming obsolete, parties may be fused with advantage; but coalitions, which are alliances of parties, each retaining its distinctive character, when effected necessarily draw loss of respect and influence along with them. The distinction between the parties of that day was still too strongly marked to admit of their being fused together, and their leaders were too wise or too fond for a coalition. In three days Lord Wellesley saw that the undertaking was hopeless, and resigned his charge.

On the 6th of June, Lord Wellesley announced in parliament that he was at the head of the government. On the 1st of July Lord Wellesley brought forward a motion favourable to Roman Catholic claims in the House of Commons, similar to that which was moved a few days earlier in the House of Commons. It was lost by only one vote, and that vote a proxy. He continued for ten years from this time to offer a modified opposition to government. During the Peninsular war he had repeated in his speeches for the indemnity to the India Company, and his brother. In 1815 he condemned in unqualified terms the disregard to commercial interests that marked the treaties by which the peace of Europe was consolidated.

In December, 1821, he accepted the appointment of lord-lieutenant of Ireland, an office which he continued to hold till March, 1828. The nomination of the Marquess Wellesley, a well-known advocate of the Roman Catholic claims, to this high office, raised on the one hand the expectations of the professors of that religion, and excited on the other great excitement in the opposition party. His arrival was the signal for an outburst of the fiercest party spirit. The Orangemen of Dublin insulted the lord-lieutenant in the theatre, and the southern counties became the scene of insurrectionary movements. The viceroy commanded Sir John lickey to adopt a conciliatory policy, but the times did not admit of its being followed up. It was deemed necessary to have recourse to an Insurrection Act and other coercive measures. Yet the provincial chiefs of the Marquess Wellesley continued to command respect; his impartiality and kind disposition escaped impeachment. The Earl of Liverpool's retirement from public life had no effect upon the position of Lord Wellesley, for both Mr. Canning and Lord Goderich were ready to accede to his propostions. But when the Duke of Wellington came to assume the reins of government, the first declaration which he made upon the subject left the lord-lieutenant of Ireland no alternative but to resign.

On the formation of the Grey ministry the Marquess Wellesley accepted office under it. In 1831 he was appointed lord-steward. In September, 1833, he resigned that office, and was once more appointed lord-lieutenant of Ireland. On Sir Robert Peel's brief administration (1834-5), he resigned the government, though urged by his brother to remain. He accepted the office of lord-chamberlain on the formation of the second Melbourne ministry, in April, 1835, but resigned it in the course of the year, and was afterwards appointed to the House of Lords.

He died at his residence, Kingston-house, Brompton, on the morning of Monday, the 26th of September, 1842, in the 83rd year of his age.

The Marquess Wellesley was twice married. His first wife, Hysacine Gabrielle Roland, was married to him on the 1st of November, 1794. They had had several children who died young, but none after marriage. They separated soon, and were not again reconciled. The first Lady Wellesley died in 1816. On the 29th of October, 1825, at the advanced age of 65, the Marquess Wellesley married for the second time. His wife was an American lady, daughter of Mr. Richard Caton (granddaughter of the eminent revolutionary patriot Carroll of Carrolton), and widow of Mr. Robert Patterson. By this lady, who has survived him, he had no children.

Lord Wellesley's character was simple, frank, and of enlarged views. His administration in India was brilliant and productive of lasting good; though part of the credit must be attributed to the high cast of official talent developed in the East India Company. His arrangements of that body, and part to the efficient assistance he derived from his brother and the other generals in the field. The marquess was an elegant scholar, of a disposition too delicate to stand the ruder shocks of parliamentary warfare. His prosperous career, more flattering to his ambition than productive of emolument. His father's debts were paid by him voluntarily, but he was unable to preserve the family estates. In 1857 the directors of the East India Company passed a resolution to the effect that they had reason to believe the
Marquess Wellesley was involved in pecuniary difficulties, and that therefore they deemed it their duty to offer him some further acknowledgment of his distinguished services. The resolution proceeded to state that, on the fall of September, the sum of 150,000l. was set apart for the Marquess Wellesley—a grant which on his suggestion was abandoned to the army. It was afterwards determined to vote him an annuity of 5000l., which had ever since been paid; but the Court of Proprietors believed that the Marquess, by the advances he had made to the grant, and under these circumstances it was resolved that the sum of 20,000l. be placed in the hands of trustees for his use and benefit. This grant his lordship accepted.

Some Latin poems by the Marquess were published early in 1835, a thin 8vo., published in London, purporting to be a history, by the Marquess, "of all the events and transactions which have taken place in India during his administration." It is a mere translation, from a French version of some of his intercepted despatches, published at Paris. In 1836 Mr. Montgomery Martin published, in five volumes, 8vo., at the expense of the East India Company, 'Despatches, Minutes, and Correspondence of the Marquess Wellesley, during his Administration,' in a thin 8vo. volume, re-published, in a thin 8vo., from parliamentary papers, 'Despatches and Correspondence of the Marquess Wellesley, during his Mission to Spain.' His lordship also published a number of occasional pamphlets:—"Substituting the House of Commons on the House of Lords, in 1794;" "Notes relative to the Peace concluded with the Maharrats;" "Letters to the Government of Fort George, relative to the form of government established therein;" "Letters to the Directors of the East India Company, on the subject of the Mahratta rebellion." This sketch has been compiled from the publications mentioned above; the 'Annual Register,' and the 'Parliamentary Debates,' and from a memoir of the Marquess Wellesley, which appeared in the 'Times' newspaper soon after his death.

WELLS, PROVINCE OF [PENANG.]

WELLSBOROUGH. [NORTHAMPTONSHIRE.]

WELLINGTON. [SHROPSHIRE.]

WELLINGTON. [SOMERSETSHIRE.]

WELLINGTON. [ZEALAND, NEW.]

WELLS. [ARTESIAN WELLS; SPRINGS.]

WELLS, MINERAL. [WATER, p. 111.]

WELLS, an ancient city and bishop's see, and parliamentary borough, 120 miles from London, in the hundred of Wells-Forum, in the county of Somerset. It is situated in a valley at the foot of the Mendip Hills, near the source of the river Ax, and also near that of another spring, called St. Andrew's Well, from which the initial of the town's name is derived. It was nearly all the town, which is situated in a distance nearly all round the city. The founder of the first church at Wells is said to have been Ina, king of Wessex, in 704. In the reign of Edward the Elder, in the beginning of the 10th century, the town was a bishopric. About 1091 John de Villula, who, by the practice of physic at Bath, and by other means, is said to have earned the means of purchasing the see from William Rufus, obtained the bishopric, and removed the episcopal seat to Bath, and called himself bishop of Bath only. This led to bitter disputes, which were settled by Bishop Robert, the successor of Villula, who, about 1139, determined that the diocesan should be styled bishop of Bath and Wells, and be enthroned on his admission in both churches. He was archbishop of York, and on his death, his successor had already gone to decay. In 1202 King John granted a charter erecting the town of Wells into a free borough, constituting the men free burgesses, and granting a Sunday market and five annual fairs. The governing council of the borough, up to the time of the passing of the Non-John Corporation Act in 1835, was the 31st of Elizabeth, under which corporation, a self-elected body, consisted of a mayor and recorder, seven masters or aldermen, sixteen common burgesses, and an indefinite number of burgesses. In 1835 the number of freemen was 460, and the mayor, recorder, and senior master acted as justices for the borough. The remodelled corporation consists of four aldermen and twelve councillors, and the number of burgesses has been reduced to an indefinite number of burgesses. In 1835 the number of freemen was 460, and the mayor, recorder, and senior master acted as justices for the borough. The income of the corporation in 1840 was 1088s., of which 517l. arose from borough and gaol rates; 149l. from tolls and dues; and 170l. from rents and fines on renewal of leases. The borough expenditure for the same year was 1305l., of which 17l. was for police and constables; and 600l. for public purpose. The amount of borough rate levied was 442l.; and in the same year there were 343l. levied under local acts. The corporation was 1700l. in debt.

The limits of the borough have been extended, so as to comprise the actual city and suburbs, and they now coincide with the limits of the parliamentary borough, which were enlarged when the Reform Act was passed in 1832, but only include that part of the out-parish of St. Cuthbert, adjoining the city which is built. The number of borough voters on the register in 1839-40 was 414: in 1837 there were 103 freemen, who were not burgesses, though they were entitled to vote for the members of the city. Wells has returned two members to Parliament since the reign of Edward 1st., and the Reform Act made no alteration of the number.

The city is situated in a large parish called St. Cuthbert, which contains many hamlets, and extends in every direction beyond the city: the parish of St. Andrew, which comprises a few persons only, is entirely living in it than there were 23 years before. The silk trade had been wholly given up, but there was still one large stocking manufactory, which, within the two preceding years had employed as many as 1500 persons. The town still stands on one side of an extensive market, as is commonly held the place of the cathedral close. The cathedral, which is one of the finest structures of the kind in England, forms a striking object as seen from all the great roads leading to the city. It is in the usual form of a cross, the principal limb or bar, which extends from east to west, is 371 feet in length, and the transept measuring 135 feet from north to south. The tower, which is over the junction of the nave and transept, rises to the height of 160 feet from the floor; and two other towers measure the same height, crossing the extremities of the west front. This façade is remarkable for its tracery and sculptured figures: there are about 150 statues of the size of life, and above 300 others of smaller size; and although many of them are a good deal mutilated, the effect is very striking. The present cathedral was begun in the early part of the reign of Henry III. (1216-1272) by Bishop Joceline de Welles, who also made Wells his place of residence, and in other respects restored it to the precedence which, on everything below except the west end, it had once enjoyed. The entire body of the church, from the west end to the middle of the present choir, is supposed to have been the work of this bishop. The two western towers were added about the end of the 14th century, that at the eastern end, the choir, and the western tower, the north by Bishop Butwth, twenty years later. The church had been previously completed to its eastern extremity, and the great central tower erected, soon after the completion of the last. The three towers, which are so well placed that the glory of Wells cathedral, and by many it is said to be the most beautiful specimen of ecclesiastical architecture in England. There are several antient and other remarkable monuments deserving of notice. The clonsters of Wells, which stand in a quadrangle within the cloisters, the sides severally measuring from 150 to 160 feet. The chapter-house is a handsome octagonal building, 52
feet diameter in the interior, the roof being supported by a single central pillar. The episcopal palace stands at a short distance south from the cathedral, and with its lofty and embattled wall, enclosing an area of about seven acres, and surrounded by a broad moat filled with water, resembles an old baronial castle. The deanery-house is north-west from the cathedral, and beyond are twenty houses called the Vicar's College or Close, an establishment consisting of the dean and chapter, and of the college, of which the dean, and chapter, of the great annual income of 698£, net annual value 564£. The Independents, Methodists, and Baptists have places of worship: the number of Sunday-school children belonging to the different denominations in 1833 was as follows:—Church, 122; Independents, 90; Methodists, 43; and Baptists, 40. The endowed charities are numerous, and in 1840 they amounted to 1853£, administered by nine trustees. The principal are an almshouse for forty men and women, and a hospital for seven almshouses on a smaller scale; two schools, called the Blue Schools, for 34 boys and 20 girls, twenty of each being clothed, the boys apprenticed, and an outfit being provided for the girls on going to service or otherwise entering upon some occupation; a grammar school for boys supported by the dean and chapter, who allow the master a salary of 30£ a-year, with apartments, and a school-room in the cathedral cloisters. In 1829 an infant-school was established, which in 1833 was attended by 52 males and 53 females.

The market-days are Wednesday and Saturday; and there are fairs in May, July, October, and November.

(Contribution to History of Somersetshire, vol. i.; Britton's Catalogue of the British Museum.)

WELLS, CHARLES WILLIAM, physician, was born at Charleston in South Carolina, in May, 1757. His father and mother were natives of Scotland, and emigrated in 1733. He was sent by his father to Dumfries and afterwards to Edinburgh, where he was apprenticed to a surgeon. He returned to Carolina in 1771. The revolutionary movements shortly after commenced in America, and his father, who espoused the royalist party, was obliged to flee to Great Britain, where he was followed by his son in 1775. He then went to London and commenced practice as a physician in 1783. In 1790 he was appointed physician to the Finsbury Dispensary, and in 1795 was elected assistant-physician to St. Thomas's Hospital, and full physician in 1800.

Dr. Wells was a fellow of the Royal Society, and published a number of the 'Transactions.' In 1796, 'On the Influence which incites the Muscles of Animals to contract,' in M. Galvani's 'Experiments.' 2. In 1797, 'Experiments on the Colour of the Blood.' 3. In 1811, 'Experiments and Observations on Vision.' In the 2nd and 3rd volumes of the 'Transactions of a Society for the Promotion of Medical and Surgical Knowledge,' he published several papers on various departments of medicine. His contributions to newspapers and magazines were very numerous, and he was a man of clear and judicious thought and arguments. His last work, and the one on which his reputation as a philosopher must rest, is his 'Essay upon Dew,' which was published in 1814. The demonstration of the nature of dew in this work is an extremely fine application of the principles of philosophical botany, and is deservedly given the author a wide-spread reputation. The experiments involved in this inquiry were such as to lead him to expose himself frequently for long intervals to together to the night-air. The consequence was, that it brought on attacks of disease from which he never ultimately recovered, and he died on the 18th of September, 1817. Mr. Wells was an accurate observer and an acute reasoner, and all his productions bear marks of a superior mind. In an edition of his works published in 1821 is an autobiography written a short time previous to his decease, from which this notice has been chiefly taken.

WELSH LANGUAGE AND LITERATURE.—Literature. The Welsh language is that which is now spoken, and has been so far back as historical records extend, in the principality of Wales. The name of 'Welsh' was first given by the people who speak it by the Anglo-Saxons, and the same term or a similar one seems to have been used by the Germans, the Saxons, and the Slavonic languages to denote the Italians, or other nations whose languages resembled the Latin. 'Welschland' was the name for Italy in several of the middle ages, and is still perpetuated in the languages of the common people; the name of that country in Polish is 'Wlochy,' and the appellations of the Walloons and the Wallachians are derived from the same root. The Welsh are probably indebted for the name to the Saxons as subjects of a Roman province.

The name which the Welsh give to themselves is 'Cymry,' and to their language 'Cymreig,' the obvious resemblance of the sound of which to 'Cumbri' has led many to identify them with the Celts. The Roman conquerors were convinced that the language was not that of a Celtic nation by any means, as is shown by the fact that they never ceased to write in Latin; and the educated opinion however with regard to their origin is that they are a Celtic tribe, and of the same blood and language as the native Irish and the Scottish Highlanders. They claim the appellation, and are but arguing for their language the honour of having been the first spoken in this island, which they support, among other grounds, by the signification of the word 'Cymry,' which is said to denote 'primitiveness.' It is probable that most of these appellations are well founded, but it is certain that there is no necessity for doubt, but nearly all are subject to some degree of doubt, and all have been warmly contested of late years, during which more attention has been directed to the subject. The meaning now affixed to the word 'Cymry' does not appear to have come into the language until the end of the eighteenth century. Even the claim of the Welsh to the appellation of Celts has been disputed. Their having been the primitive inhabitants of Britain is denied by Sir William Betham, who contends that the earliest known spellings of places in England can only be satisfactorily derived from the Gaelic or Irish, and that the Welsh are a foreign tribe, the Beige of Casar, who had only made his appearance after the battle of Mons Meg, which was fought before the date of Caesar's own invasion. In the 'Gentleman's Magazine' for June, 1843, a work is announced by the Rev. R. Williams of Llangawadlais, 'Dictionary of the Antient Cornish Dialect of the Celtic, with the Synonyms of the Welsh.' In which the Welsh have been made to prove that the antient names of places, not only in England, but in Scotland and Ireland, are clearly derivable from the Welsh, and that therefore the Welsh were the original inhabitants of all these countries. The most singular dispute however that has arisen connected with the Welsh language is that on the affinities between it and the Gaelic and Erse. The general and almost undisciplined opinion for a long time had been that the two languages were dialectical forms of the same original language, and a connection between the two, or the Gaelic and Erse, was hinted at by the name of 'Cymry,' which means in an animated correspondence on the subject, which was carried on in the 'Gentleman's Magazine' for 1836 and 1838. The main fact which he announced, that the most intimate knowledge of the Gaelic language would not enable him to pronounce a single word of it, since he was, as he asserted, a new to people in general, and would never have been suspected from the tone in which most Celtic scholars were accustomed to speak of the affinities of languages; but the inference which he drew from it, of a total want of connection between the two, was not refuted by other facts. The Rev. Richard Garnett, of the British Museum, who was induced to search into the question by the statements of Professor Forbes, reports in the
The Welsh language in its present state is one of the oldest in Europe; it is in fact among spoken languages the most antient of which any written monuments are preserved, unless we regard the latter as to certain degrees the antient Greek. The Welsh has poems now in existence, the origin of which is referred with probability to the sixth century. It is true that the language of these is so antiquated that the best scholars differ about the interpretation of many passages, and yet we find that in Price’s ‘Hanes Gymru,’ it is deemed proper to subjoin a modern version even of a poem by Gwawchsai, in the twelfth century, for the information of the common reader, but, generally speaking, the body of poetry which the Welsh has preserved is more probable to be of later date. In Stewart’s ‘Grammar’ we have a list of twenty-four simple prepositions (omitting mere varieties of form), and about forty improper, or compound. Of the former, fourteen are Welsh, and three Cornish; and of the latter, eighteen, or nearly one-half, radically Welsh. Mr. Griffith adds with justice that ‘the amount of resemblance is hardly so great between Icelandic and German,’ and these are unquestionably cognate languages.

On the whole, therefore, it may be stated that the Celtic languages consist of two distinct branches, the first comprising the Irish, the Gaelic, and the Manks, which are in fact merely dialects—all three intelligible to any person who is master of one; and the second comprising the Bretonic or Gallic, and the Celtic. The affinity between the members of the latter branch is not so close as that between the members of the former, or so close as it has often been asserted to be. The best evidence on this point is that of the Rev. Thomas Price, a distinguished Welsh scholar, who in the year 1820, published a very entertaining and instructive narrative of it in the ‘Cambrian Quarterly Magazine.’ ‘I may,’ he says (‘Cambrian Quarterly Magazine,’ vol. ii., p. 197), ‘be asked a question which I have of myself have proposed to another, whether I have ever visited Brittany, and that is, if the Welsh and Breton languages bear so near a resemblance to each other as is generally understood, where was the necessity of having recourse to the French as a medium of communicating words? The Welsh is now and always was connected with the French in the Welsh at once? To this I answer that, notwithstanding the many assertions which have been made respecting the natives of Wales and Brittany being mutually intelligible through the medium of their respective languages, I do not hesitate to say that the thing is utterly impossible; single words in either language will frequently be found to have corresponding terms of a similar sound in the other, and occasionally a short sentence deliberately pronounced may contain two or three words of the same sound in both languages, but as to holding a conversation, that is totally out of the question.

There have been numerous unfounded statements with regard to the affinity of Welsh to other languages than those which have been enumerated as composing the Celtic stock, the most of which have been derived from having been divested of the writer’s peculiar orthography, which, whether preferable or not to the common system, was a serious obstacle to the learner. It is still considered by many a convenient for use in English. The number of words is swollen to about 100,000, but the twelve thousand quotations which it contains, accompanied by translations, form an invaluable feature. This dictionary comprises Welsh and English only, not English and Welsh. The Welsh language is distinguished for the beauty of the compounds, which it possesses the capacity of forming to an almost unlimited extent. It has often been praised for this peculiarity. The latter part of the word is its general character, as it is now written, is that of tameness and diffuseness. Many of the phrases most constantly occurring require a greater number of words to express them in Welsh than in English. The most remarkable peculiarity is the way in which the initial letters of certain words are changed when they follow certain other words. Thus ‘ei’ in Welsh signifies ‘a dog.’ To signify ‘my dog,’ it is necessary to say ‘v y ngh,’ not only prefixing the word ‘vyr,’ or ‘my,’ but altering the initial ‘ei’ into ‘egh;’ for ‘thy dog,’ the expression is ‘v yr eg.’ For ‘my head’ beginning with a different letter undergoes a different mutation. ‘Pen,’ a head, is changed into ‘v nhyn,’ in indicating...
The use of a language so different from English by a portion of the inhabitants of the country has often been considered an evil, but no active measures appear to have been taken against the peculiar speech of Wales. The fear of a progressive extinction of the language, if not of mere neglect, has led to the supposition that the Welsh would also disappear from the same cause; and indeed Mr. Wynn, the president of the Asiatic Society, has considered the necessity of a systematic attempt to save the language from the danger of its extinction as a proof of the efficacy of the system of such cases, in a discussion on the subject of endeavouring to introduce the English in the place of some of the native languages of India. The same idea was prevalent a century or a hundred years before, when the translator, the poet, relates in one of his letters (printed in the 'Cambrian Register,') that in a discussion on the Welsh language with another Welshman, Owen, the translator of Juvenal into English, 'the wicked imp, with an air of compunction and regret, refers to the glory of the Myrwyrian Academy, and his own reading, and that to his certain knowledge the English daily got ground of it, and he doubted not but in a hundred years it would be quite lost.' The hundred years that have since elapsed have not confirmed this opinion. 'The language,' says Dr. Owen in an address delivered in 1821 on the formation of the Cambrian Society in Gwent, 'since the reign of Offa, who made his celebrated dyke to prevent incursions of the Welsh into his territories, the Welsh language has receded completely from a part of the soil of Cymru, and some parts of North Wales; and in other districts, where the long lapse of time since the conquest by Edward I. and the intimate incorporation by Henry VIII., and the extreme difference in the girth of the country, the language is considered, has gained less ground than could be expected. An Englishman travelling the public roads of the principality often meets with persons who speak English, and those whom he has occasion to address at this time have eighty volumes of the Welsh language; the gentry he may visit speak English, and those who call upon them probably use the same language in his hearing; and from these slight facts which come to his knowledge, he erroneously concludes that the English is the prevailing language of the country. It is only when a man has resided a long time in the interior, having intercourse with the common people, that he can form a true estimate of the extent of the Welsh language; and most persons will readily assent to the truth of the assertion, that the Welshman of the Cambro-Saxon Society男, but of tens of thousands, and even of some hundreds of thousands of the inhabitants of the principality.' (Cambro-Britons, vol. iii., p. 229.)

The Welsh language has not only become more firmly rooted in the Old World in recent times, but is also a bright and shining star in the New. While Dr. Macleod, in the preface to his 'Leabhar nan Cnoc,' exults in the hope that as Gaelic is destined to perish in the Highlands, it will survive beyond the Atlantic in the living languages of the numbers greater than ever spoke it in Europe, the Rev. T. Price, in his 'Hanes Cymru,' relates with similar exultation that he has received from America some numbers of a periodical, the 'Cyfaill yr Hen Wlad,' or 'Friend of the Old Country,' now for some time accessible, to which he attributes the prosperity of the Welsh language, and says that while the American volunteers for the 'delivery of lectures in the Welsh language on scientific and useful subjects,' and the translation of scientific treatises into Welsh.

Literature.—The quotation which was prefixed to a volume of 'The Cambro-Briton,' devoted to the cultivation of Welsh literature, is peculiarly happy: 'Nulli quidem mihi satis eruditii videntur quibus nostra ignota sunt.' The history of the literature of Wales is strikingly different from that of every other in Europe, and the apathy which has allowed the subject to remain in obscurity and neglect can hardly be explained.

The effect of this apathy has been that the most interesting points of the history of Welsh literature still remain to be subjected to investigation and criticism. The Welsh claim to be in possession of a body of poetical compositions the antecedents of which antedate the conquest of the thirteenth century. Till within the last half-century the proofs on which this assertion rests—the compositions for which this antiquity is claimed—remained buried in the libraries of colleges and of individuals, some so difficult of access, that literary men have not hesitated to employ the word 'evil' against the eighteenth century, who spent his life in researches into Celtic literature, had never been able to obtain a sight of some of the most interesting. This reproach was mostly, if not entirely, due to the apathy of the gentry of Wales, by the liberality of Owen Jones, a furrier in Thomas Street, who, at the expense, it is said, of more than a thousand pounds, collected and published, in 1801 and subsequent years, in three volumes, under the title of 'The History of the Literature of Wales,' the publication of Welsh literature for nearly nine hundred years, from about 500 to 1400. In this task Owen Jones was assisted by Edward Williams, better known by the name of Iolo Morganwg, or Edward of Glamorgan, and by Dr. Owen Price, the very name of whose undertaking was undertaken too soon. 'A number of manuscripts equal to what now remains,' says Owen, in the fourteenth volume of the 'Archæologia' of the Antiquarian Society, 'has perished through neglect within the last two hundred years, that is to say, within the period of the beginning of the sixteenth century.' By the publication of the 'Myrwyrian Archæology,' a vast mass of materials was preserved, and it did not comprise the whole of what Jones intended to publish—in the library of the Welsh school at London, no less than eight thousand manuscript books of various ages and sorts, were preserved, of which a thousand were intended for a continuation of the work. After the cessation of Jones's exertions, the old apathy returned, and continued till within the last two or three years. Dr. Owen exerted himself for several years to obtain support for the publication of the Bible in the Welsh, but died without accomplishing his purpose, which is now being carried into execution by Lady Charlotte Guest. At present the prospects of Welsh literature are more favourable than on any previous occasion. The annual journal issued by the poet Lewis Glyn Cothi, and has other publications in the press. Another association has recently been instituted, on the model of the Camden and similar societies, for the purpose of publishing manuscripts, whether in Welsh or other languages, connected with Wales; and these are to be accompanied with translations. It also announces a translation, by the Rev. J. Williams, of the 'Myrwyrian Archæology,' which had nothing English about it but its prefaces. In the latter portion of the plan of this society the second step is taken of the three which are requisite to bring the literature of Wales fairly before the world. The first is, the publication of its monuments, as indispensable materials for all that is to follow; the second, the rendering them accessible, to the opportunity of acquiring, in addition to the knowledge of the Welsh language as it now is, that of all its variations during a period of thirteen hundred years. The third will be, that of applying a judicial criticism to these materials; the fourth, the publication of the works of the antient authors, that of the introduction of rhyme and the origin of romantic fiction. At present the want of published materials in some cases and of adequate criticism upon them in others renders speculation on these subjects peculiarly vague and unsatisfactory.

The Welsh, it has been already stated, claim to be in
The authenticity of these poems having been impugned by Pinkerton, in his preface to Barbour, and by Laing, in a note to his 'Vindication of Myvrian,' it was maintained by Turner, that in his 'Vindication of the Genuine-ness of the Antient British Poems of Aneurin, Taliesin, Llywarch Hen, and Merdread,' first published separately in 1803, and since appended to the successive editions of his 'History of the Anglo-Saxons.' This dissertation has been spoken of in terms of the highest approbation, and is entirely free from the scathing criticisms which a more easy rapidity acquired the knowledge of our language, Mr. Sharon Turner, is the best writer that has ever appeared on the subject.

In this treatise Mr. Turner asserts the genuineness of the antient poems on both internal and external evidence. The oldest copy extant, he says, is an antient manuscript called 'The Black-Book of Carmarthenshire,' preserved in the library at Aberystwyth, which is presented by competent judges to be of the twelfth century; so that if forged at all, the poems must have been forged as far back as that period, while in fact they are alluded to as antient by writers of the centuries immediately following. It may be noted that a similar observation is made in the introduction to the Calibro Edition of the Welsh in which the genuineness is ascertained by the light in which it is presented by authentic evidence. Finally the language is a pretty well-adapted, often obscure, and sometimes unintelligible, and altogether different from that of compositions known to be of the twelfth century.

The most elaborate reply which has appeared to Mr. Turner's 'Vindication' is given in a criticism on it in the Edinburgh Review' for April, 1803. It is probable the objections of the critic appear to us to be scarcely deserving of notice. There is one however which he touches on lightly that seems of very great weight. Mr. Turner and others who maintain the authenticity of most of the antient Welsh poems do not maintain the authenticity of all; and if it be once admitted that some of the compositions which pass under the names of Aneurin and Taliesin are forged, the whole fabric which has been reared in their defence seems to rest on an insecure foundation.

It is true, that in his 'The Goddin,' bearing a very strong marks of authenticity, Aneurin was one of the northern Britons of Strathclyde, who have left to that part of the district they inhabited the name of Cumberland, in token that it was once in possession of a section of the Cymry. In this poem he laments the death of his comrade slain by the Saxons at the battle of Catterth, in consequence of having taken too freely of the mead before joining in combat. He commemorates many obscure chief-tons; it is the occasion of a song which is doubtless dictated by the freshness of grief. A portion of this poem has been translated by Gray; a version of the whole was inserted by the Rev. Edward Davies in his 'Mythology of the Druids,' and a translation of the whole works of Aneurin, 'The Goddin' and the 'Odes of the Months,' was published in 1829 by Mr. Prober.

The works of Taliesin, the contemporary and friend of Aneurin, are of a much more questionable description. There is a story of the adventures of Taliesin current among the Welsh Mathematicians, which has a strong similarity to many of its incidents to the productions of Eastern fiction. It is printed in Welsh in 'Myvrian Archaeology' and in Welsh, with an English translation, in the fifth volume of the 'Cambrian Quarterly Magazine.' According to this story, Gwion, the Welsh Cuckoo, was a slave, and his master, Merion, or Merioneth, a wacthful husbandman, in which he was preparing a concoction that was to bestow knowledge and genius on her son, incurred the vengeance of his mistress by involuntarily drinking the three breasts which contained these wonderful effects. Of course he became endowed with wisdom, and fled from the wrath of Kiridwen, who pursued him. He fled in the form of a hare, she pursued in that of a hound; when nearly overtaken, he turned to a fish, and she to an otter; by a stroke of his wand Taliesin was finally swallowed in the form of a grain of wheat by Kiridwen, in the form of a hen. After nine months she delivered of him again; and, unwilling directly to take his life, she lay in a leathern bag and cast him into the sea; after which he was found by Prince Elphin, the son of Gwyddno, at a weir on the sand between Dyvi and Aberystwyth. This strange story appears at first sight to be of the same character with those which were told of Virgil in the Cumbrian dialects, and of the 'Mabinogion' which exhibits a name from the wish to give it an air of authenticity in the eyes of ignorance. But this explanation is not sufficient. In the poems attributed to Taliesin continual allusions are found to this preposterous narrative; and it is thought that Taliesin by these allusions may be explaining the philosophy and metempsychosis; and he attributes to the effects of the caldron of Kiridwen the gift of prophecy, which he claims.

Mr. Peacock, in the novel of the 'Misfortunes of Elphin,' says, 'Where Taliesin picked up the story which he told of himself, why he told it, and what he meant by it, are questions not easily answered. Certain it is that he told this story to his contemporaries, and that none of these contradicted it. It may therefore be presumed they all believed it, and that the poet was perfectly honest in his desire to come down to it. It must be acknowledged however that the incidents of the narrative seem of a character likely to be invented in a century later than the sixth, and indeed some of the poems of Taliesin are of such which Mr. Turner seems to show the least inclination to defend. These poems exhibit also an introduction of the Greek and Latin metres into Welsh poetry, and even of scants of Latin, in the name of Wales in the celebrated lines prophetic of the fate of his countrymen, which have been quoted oftener than any other poems from Taliesin.

Ea Ner & volant
En bleddin & goddant
Ea sir & gaearn
Gwth gwlf Walla.*

'Their Lord they shall adore,
Their language they shall keep,
Their land they shall lose Except wild Wales.'

A belief in the authenticity of the other poems of Welsh antiquity would certainly be strengthened by the fact that it could be shown that the genuineness of those of Taliesin was not involved in theirs. There is still so much to be elucidated by the critical examination of these antient remains, that it cannot at present be ascertained whether this is the case.

The five Elegies and the 'Elegy on Old Age' of Prince of the Cumbrian Britons, with a literal translation by William Owen, were published in 1792. Llywarch Hen, like Aneurin, was one of the warriors of Strathclyde, and, like him, was driven to Wales by the successes of the Angles. The Elegies are ascribed to his memory, and have been ascribed to that of his the most celebrated of his countrymen, and are superior in interest. Profer, who remarks that 'their authenticity has been proved by Mr. Turner; and they are exceedingly curious. Some are in the form of a pastoral, others in the form of a lyric poem, others preserved in the notes to his 'Sir Thomas More,' with a universal strain as melancholy as it is rude. 'The Elegy on Old Age and the loss of his Sons,' and the lines 'Te Cuckoo in the Vale of Cyswy,' are particularly striking; but the latter poem is ascribed by some to a certain tribe of Llywarch, who lived towards the end of the fourteenth century; the former is shown to be Llywarch's by many circumstances mentioned in it. Some of the remaining poems in the 'Myvrian Archaeo-

* En Ner & volant
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Ea sir & gaearn
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'Their Lord they shall adore,
Their language they shall keep,
Their land they shall lose Except wild Wales.'
The privileges of the bard form the most peculiar and interesting portion of those curious collections of Welsh laws, which are still extant from a very early period. The laws of Howell Dda, or Howell the Good, a king of South Wales, were compiled to his 'Suo Gwait' about the sixteenth century; but in a poem by Cynfeildil, of the date 1610, reference is made to still older enactments, to a concession of privileges to the men of Arvon by Run in the sixth century, and a similar one to the men of Powys by Cadwollan in the seventh. The last law known has been reprinted from its first appearance in Wotton's 'Leges Wallicae'; the last edition, in Welsh and English, is to be found in the 'Antient Laws and Institutes of Wales,' published in 1841, by Aneurin Owen, under the superintendence of Mr. C. Howell. But these two works, and all the general laws of Wales then collected, the bards were entitled to dues from marriages, to exemption from bearing arms, and to innumerable other privileges; and a bard was particularly favoured who knew the prophetic song of Taliesin.

In the 'Archaeologia,' p. 216, the principal heads under which ancient Welsh literature may be classified are—poetry, bardic institutions, laws, history, theology, ethics, proverbs, dramatic tales, and grammar; and that the work is more extensive, for it may be computed to fill about eight parts out of the ten of our old writings, omitting to take into account the heraldic collections altogether; but with respect to the quantity that is printed, such a proportion is as absurd as it is unfair. I have made a calculation so as to enable me to infer that I have perused upwards of 13,000 poetical pieces of various denominations for the purpose of collecting words, in the course of about eighteen years that I have been compiling the dictionary of the Welsh language.

The 'Triads' may be said to belong to most of the remaining classes, for they are by turns historical, ethical, legal, and theological. They are enumerations of a triad of persons, events, or things, occurring in one short sentence. This form of composition, originally invented in all likelihood to assist the memory merely, has been raised by the Welsh to a degree of elegance of which it hardly, at first sight, appears susceptible. The 'Triads' are indeed so happily put together without much attention to the date of their composition; the oldest are probably as old as anything in the language. Short as they are individually, the collection of the 'Myrwyen Archaeology' occupies ten pages of the 'Arber Collection.' The 'Wisdom of Cudog the Wise,' a collection of proverbs, said to be made by St. Cudog, who lived in the sixth century, from the then antient adages of the Britons, is much of the same style of composition as some of the 'Triads'; and indeed some of the great ones have the same shape.

In history the Welsh literature is not rich. Their first authentic antient historian is Caradoc of Llanearvan, who lived in the twelfth century, and wrote a history of Wales, an English translation of which was made about 1527, by Brapheyn Lloyd, published by Dr. Powell, in 1584, and has since been frequently reprinted, the last time at Shrewsbury in 1832. The original was printed in the second volume of the 'Myrwyen Archaeology.' It is a detached and choice chronicle of the Welsh.

The fictitious history translated by Geoffry of Monmouth had a very different fate from the dry records of his contemporary. His work, a 'History of Britain,' in nine books, in Latin, which, according to his own account, he translated from theump to the English by Walter Calenius, archdeacon of Oxford, who had collected them in Brittany, was written in the reign of Henry I, and appears to have been spread at once to the name of its hero, King Arthur, throughout Europe. It commences with the story of Brutus from Troy to Britain, and contains all the strange and wonderful stories respecting Arthur and Merlin which have become familiar to the readers of romance. There is a Welsh translation of this book, which goes by the name of the 'Chronicle of Tywilio,' and has been re-translated into English by the Rev. Peter Roberts, at the end of the manuscript of which is the singular note in Welsh: '11, Walter, archdeacon of Oxford, turned this book from Welsh into Latin, and in my old age I turned it the second time from Latin into Welsh.' It was long supposed that this was in this book the claim of Geoffrey of Monmouth, but it is now rather believed that his statement of being only the translator is correct, and that he really had a Welsh original before him. The arguments for this belief have been given by Mr. Ellis, in the introduction to his 'Life of Early British Antiquaries.' If there were Welsh originals, it becomes a question of considerable interest if they still exist; and the prevalent opinion now appears to be that they are to be found in the 'Mabinogion,' or Children's Tales, of which a long extract of the latest version is reprinted in the 'Red Book of Hergest,' preserved at Jesus College, Oxford. The tales in this collection are in prose; they comprise not only those of the court of King Arthur, but the Life of Taleisin, which is as well as any of its companions, a number of similar tales, and the story, thought of Hampton. Owen Pughe published several of the Mabinogion, in Welsh and English, in the 'Cambrian Register' and the 'Cambrian Quarterly Magazine,' and it has been suggested that there may exist a prose version of the original, and the whole, but could never obtain sufficient support. They are now being issued in numbers, under the superintendence of Lady Charlotte Guest, who declined availing herself of the translation of the whole, and prefers to wait for the publication of a separate translation by Mr. Tudor Parry, to be published in Welsh invention or tradition. The reasons in favour of this view have been ably summed up in an Essay on the Influence of Welsh Tradition upon European Literature, which obtained the prize proposed by the Abercromby University Society in October, 1848. Such a work, though not published, may be seen at the British Museum, to which a privately printed copy was presented by the author, Mr. J. D. Harding. Mr. Harding, in this Essay, and the Rev. T. Price, in his 'Bar of Cymru,' refer to the view, that the Welsh were first exercised in the Welsh versions of the stories of the Round Table which is contained by the original of Geoffry of Monmouth, or, like the Chronicle of Taliolo, taken from him; but in either case it now appears to be the prevalent opinion that the cycle of romance existed in Welsh invention or tradition. The reason for this view has been ably summed up in an Essay on the Influence of Welsh Tradition upon European Literature, which obtained the prize proposed by the Abercromby University Society in October, 1848. Such a work, though not published, may be seen at the British Museum, to which a privately printed copy was presented by the author, Mr. J. D. Harding. Mr. Harding, in this Essay, and the Rev. T. Price, in his 'Bar of Cymru,' refer to the view, that the Welsh were first exercised in the Welsh versions of the stories of the Round Table which is contained by the original of Geoffry of Monmouth, or, like the Chronicle of Taliolo, taken from him; but in either case it now appears to be the prevalent opinion that the cycle of romance existed in Welsh invention or tradition. The reason for this view has been ably summed up in an Essay on the Influence of Welsh Tradition upon European Literature, which obtained the prize proposed by the Abercromby University Society in October, 1848. Such a work, though not published, may be seen at the British Museum, to which a privately printed copy was presented by the author, Mr. J. D. Harding. Mr. Harding, in this Essay, and the Rev. T. Price, in his 'Bar of Cymru,' refer to the view, that the Welsh were first exercised in the Welsh versions of the stories of the Round Table which is contained by the original of Geoffry of Monmouth, or, like the Chronicle of Taliolo, taken from him; but in either case it now appears to be the prevalent opinion that the cycle of romance existed in Welsh invention or tradition.
This poem is written in a phraseology so obscure to the modern reader, that the Rev. T. Price, who quotes it in his recently published ‘Hanes Cymru,’ thinks proper to add a version of it in modern Welsh. Dafydd (1160-1220) was a poet, and compiler with Gwalcmai, but of inferior talents. Forty of his pieces are printed in the ‘Mwyrrian Archaiology,’ of which the most interesting is his poem entitled ‘The Death-bed of Cynddelw,’ and his verses to Madoc, prince of Powys, the last of the bardic line of whom he was inspired, and is generally supposed to have discovered the emigration of Wales. A few of his rivals were illustrious for rank as well as genius:—Owain Cyveilioc (1160-97), the prince of Cyveilioc, a portion of Powys; and Hywel (1192-1250), one of the sons of Owain Godred, and therefore the brother of Madoc, who aspired to his father’s throne, and fell in the contest, the issue of which led to Madoc’s emigration from Wales. The most conspicuous production of Owain is the ode entitled ‘The Henlas Horn,’ or ‘The Long Blue Horn,’ which has been frequently translated since its first appearance in Evan’s ‘Dissertation on the Bards.’ The poems of Hywel are chiefly love-odes, of which the finest is one entitled ‘The Choice.’ One of their contemporaries, Llywonald (1170-1220), who was one of the poetical bards of severals of the princes, is commonly known by the singular appellation of ‘Friydd y Moch,’ or the ‘Poet of the Pigs,’ for what cause is not now ascertainable. One of his productions is an invocation, when undergoing the fiery ordeal, by which he was separated, to ascend heaven, if he possessed any knowledge of the fate of Madoc.

The names of the bards now become still more numerous, and the period in which they lived may be considered as the middle of the middle age, distinguished by—Einion, the son of Gwalcmai, the son of Meilly (1170-1220), of a family in which poetical genius seems to have been hereditary; Elidwr Sais (1160-1220), Philip Brydyyd (1200-1250), and Prydydd Bychan (1200-1250). Their poems are epics, and lay a claim to the princes and great men with whom they were connected. The next generation of bards must have been that which witnessed the conquest of Wales by the English. According to a tradition which has been made universally known by—The bard must have been by the example set by the invaders; but the modern story of the massacre of the bards appears to rest on no adequate authority. There is no memorial or tradition of it in the country which is said to have been its scene, and no allusion to it in the productions of the following. In the ‘Mwyrrian Archaiology’ there appears no greater falling off in the number of poetical productions than might naturally be expected as the result of a foreign conquest, of however mild a character, and the bardic system has continued to produce a bard who in nation and popularity surpassed all who preceded him.

Dafydd ap Gwilym has sometimes been called the Welsh Ovid, and sometimes the Welsh Petrarch, but is said by his patron to this office led to a contest of satire with less than to any other poet, whether of his own or other countries. His poems are of a character almost entirely new in the literature of Wales; the subjects of them are chiefly themes of love and social festivity, instead of valour and heroism. The exact dates of Dafydd’s birth and death are unknown, but he is supposed to have been born about 1340, and to have died about 1400; the incidents of his life are both interesting in themselves and curious from the light they throw on the manners of the time. He appears to have been the son of Gruffudd, lord of the town of Llandaff, when he took refuge in the house of the same Ivor, and to have been turned out of doors by his parents in consequence of impertinence to them. Here he became tutor and lover of Ivor’s daughter, whom, when the father found what was going on, he put in a nunnery at Anglesey, but not withdrawing his patronage from Dafydd, who composed many songs to the lady, and was about this time elected chief bard of Glamorgan, from which he is often called Dafydd Morganwy. His appointment to this office led to a contest of satire with Rhys Meigan, another bard, who reflected on the illegitimacy of Dafydd’s birth, but was answered in a poem of such pungency, that on hearing it recited he fell down and expired on the spot. The handsome person of Dafydd and his poetical talents made him at this time such a favourite with the ladies, that he grew sufficiently vain of himself by giving an assignation to twenty-four different mistresses, with all of whom he appointed an interview at the same spot, and, concealed behind the bushes, laughed at the meeting. They all, when they had discovered the trick, derided him, and the reflection on his own vanity and tenuity to make his appearance, and in a humorous verse desired her who had kissed him oftentimes to strike him first. The confusion and the mutual sneers of the women produced a battle, in the heat of which Dafydd escaped. He then put in another suit, but at length the woman who occupied the church thought otherwise, and Morvudd was soon after united, according to the rites of the Church, with Cynfrig Cynin, whom Dafydd christened ‘Bwa Bach,’ or the ‘Little Hunchback,’ and assaulted under that name with all the best was published to the assumed name of Maelog, in 1894. The poems of Dafydd are remarkable, among other things, for exhibiting the indications of an approach to a system of versification which was soon after carried to what may be called a point of perfection or system by the poet of the manuscript, Hael. The influence of Dafydd on the Welsh language, was as vital as that of the Church, and was not renewed until the time of Ivor Hael, wherein it was established in the form in which it remains to this day.

Our ‘system of versification,’ says Edward Williams, or Iolo Morganwg, in the ‘Cambrian Register,’ vol. i., p. 400, ‘the distribution of long and short syllables, the use of twenty-four different classes of the combination of verses, there was also another principle called consonancy, or the accordant sound of the same consonants from certain accented parts of the verse which casually embelished it. But this consonancy, being peculiarly musical in the Welsh language, was ascribed as a constituent part of verse at a congress held in the ninth century, at which presided Geraint, usually called Bard Glais, or the Blue Bard. The consonancy was afterwards modified and improved at different times, until about the end of the twelfth century, to suit the pronunciation of Ivor Hael, wherein it was established in the form in which it remains to this day.’
South, and which has been the means of leading modern writers into errors, whenever they have had occasion to speak of the two systems of poetry!

The Welsh name for this species of consanancy is Cynghanedd, and though more complicated, it has much analogy to the alliteration employed in Anglo-Saxon, Icelandic, and earlier English poetry, from which the first idea of it may have been borrowed. The Welsh name became popular at a student of English verse, composed in 1450, by a Welsh student at Oxford, to exhibit the advantages of the 'cross consanancy,' is printed in the second volume of the 'Cambrian Register.' A more recent example of it, given in the 'Cambrian Poems,' is more consonant with the English Language, and will perhaps convey a clearer notion of it than a lengthened description.

The lines are on Envy—:

A friend in Phobus' face he found,
That tender grew yet under ground,
To see his spleen disport not display,
Nor set the devil in his way.

But at the noon of night.

The introduction of Cynghanedd tended strongly to induce the poets of Wales to pay more attention to sound than sense, as may be conjectured from the specimen given, but it held its ground till in our own days, in 1819, Dr. Owen Pugh, by translating the 'Paradise Lost' into Welsh blank verse, with the twenty-first century's diction, was said to have led the way to a desirable reform.

The next distinguished poet after Dafydd ap Gwilym was Lewis Glym Cotti, who lived during the wars of the Roses. His works are less remarkable for their poetical than their historical merit. They contain two series of letters, one addressed to the original Welsh, with English notes, chiefly of explanatory historical matter, by the Gymromdonor, or Royal Cambrian Institution, in the year 1637, and occupy an octavo volume, which was edited by the Rev. John Jones, of Llanrwst, in 1837, and published, without much elegance in the 'Cambrian Register,' among the first of the Welsh poets. He eminently excelled in that talent which we call humour, and was equally master of the pathetic and the sublime.

The same writer states that his 'Elegy on the Death of Mrs. Middleton' is equal or superior to 'the two most beautiful compositions in the English language on the same subject, the 'Monody' on the death of his lady, by Lord Lyttelton, and that 'to the Memory of a Young Lady,' by Mr. Shaw. The latter, he says, was the best poem ever written in Welsh, in octavo volumes, at Wrexham, in 1625, under the title of 'Eos Ceirig,' or 'The Nightingale of Ceirig.'

The most distinguished bards of the eighteenth century were Goronwy Owen, Evan Evans, and Edward Williams. Goronwy Owen. These documents contain the names of the greatest poets that appeared among the Welsh. He was the son of a peasant in Anglesey, and was indebted for his education to Mr. Lewis Morris, a distinguished antiquary, who had him brought up for the church. He married in Oswestry, where he was curate, and says in one of his letters, 'My wife speaks very little Welsh, yet she understands some; so that I fear that if I go not to Wales, my boys will be Saxons, for by the life of me I cannot teach the eldest one word of Welsh.' He was curate to Dr. Douglas, and composed in the third person, in one of his letters, 'who defended the poet Milton against the insidious defamations of Lauder. He it is may he, it is sufficiently severe and hard towards me. I hold some little land of him appertaining to the school, and though it was set too high before, yet he has sent down this year orders to raise the rent, lest a poor wretched curate should gain anything in his service, or obtain too good a bargain at his hand.' This and similar treatment at last induced Owen to petition the Gymromdonor Society, in 1757, for assistance towards paying his passage for America, where he settled at Williamsburg in Virginia; and after the year 1767 nothing further was heard of him. About the year 1798,' says Owen Pugh, in the 'Cambrian Biography,' 'some persons in England attempted to obtain information if he were alive or dead, and with that view sent a letter over to his son. Him they found perfectly Americanized: before any answer was sent, he must first know who would pay him for his trouble.' The principal poems of Goronwy Owen were printed in the first volumes of a book called 'Dawnach Ffzlaidd,' printed at London in 1763. The book has a curious English preface by the printer, who states that it was 'put into his hands by the editor, Hugh Jones,' who 'owned himself incapable of writing an English preface to it, and therefore desired me to do that office for him.' The editor, he adds, 'being an itinerant bard in the manner of the antients, hath given me leave to tell his readers that he pretends to neither learning nor languages; he despises them all except his own, as the chief Greek poets did, calling other languages barbarous. He considers that no country or French nations have anything that may properly be called poetry; such is man's partiality towards his own country and people.'

The Rev. Evan Evans was born in Cardiganshire in 1731. He also was patronized by Mr. Lewis Morris, and educated for the church, but rose to no higher station than that of a curate, and at his death, in 1788, was reported and believed to have perished from want on a mountain. He afterwards published two volumes of Welsh sermons, 'Ddibartado Bards,' 'Specimens of Ancient Welsh Poetry,' and a poem entitled 'A Love of our Country.' His two works were more come more appreciated since his death than before. Jones, the historian of Brecon, says, in a letter, written in 1797, 'I did not think Evan Prydwyd Hir' (the bardic name of Evans) 'the poet he was. I knew him well, yet I suppose the poet who expelled the accent before it became acquainted with him.'

Edward Williams, known by the Bardic name of Tolo Morganwg, was a poet of merit both in Welsh and English. He was born in the parish of Llanearvan in Glamorgan, about the year 1717, and was of a religious turn of mind, his father being a curate of Gower; but he was given to the study of literature, and published, in 1704, present perhaps the most curious list of subscribers that ever was attached to any publication. It begins with the name of the Prince of Wales; it contains those of Mrs. Barbauld, of Dr. Johnson, of Lord Byron, of Dr. Bowles, of the Archdeacon of Cardiganshire, of General Croom, of the Rev. William Jones, Miss Hannah More, Lord Orford, Thomas Payne, Samuel Rogers, Miss Anna Seward, John Horne Tooke, Wilberforce, and General Washington. He afterwards published, in 1716, two volumes of prose, called 'Llancrwn,' and 'Cyfrinach Beirdd Prydain,' the latter contains the complete works, as the name signifies, of the bardic poets of Wales, with a biographical introduction by the bardic poet, or 'Salmag yr Eglwys yr yr Anialwch.'

Williams worked during his life at his trade as a stonemason. He lived for some time in London, and was anxious to emigrate to America, but returned to Wales, and lived and died there. He was intimate with the wealthiest and most influential persons in his country; he was one of the editors of the 'Mvyrrian Archeology,' and he was, in 1793, about to publish a collection of documents illustrative of Welsh history, but seems to have been prevented from want of sufficient support. The work was never published. It seems to have been prepared by the Welsh Manuscript Society, under the editorship of his son, Mr. Taliesin Williams, who published, in 1789, his father's 'Cyfrinach Beirdd Ynys Prydain,' or 'Secret of the Burds of the Isle of Britain.' Tolo died at Flemingstone in Glamorganshire, on the 17th of December, 1805, and Southey says, in his Life of Cowper, 'It grieves me to think what curious knowledge, and how much of it, has probably perished with poor old Edward Williams.' From some letters by him, which were printed during his lifetime, it appears that he was intimate with the bardic poets of the three countries, and that it seems that he had written his autobiography, in which he had introduced an account of Welsh literature during his own time, as well as his opinions of Welsh literature in general. This work would probably be of value, as his opinions on these subjects appear to have been formed.

The epithet which has been given to a writer contemporary with Edward Williams, 'the Cambrian Shakspere,' would give a stranger an idea that such a man had been born, and a little child beginning to read, 'This is the house that Jack built.' It is much easier to compare this to the writings of
Shakspere than anything that was ever written by Twm or Nat, whose interludes consist of nothing but the lowest and most indignt buttsynt in the human mind. "Twm or Nat," or Tom of the Valley, was the Bardic name of Thomas Edwards, who was born in the year 1738, in Denbighshire, and died, we believe, about 1802, at the age of sixty-four years. He was introduced to the Welsh bards by his father, who was a native of Anglesey. He was a person of much more than ordinary merit, and is, to this day, regarded as one of the most estimable of the bards who have ever lived in the country. His interludes, "Enterlude," as he calls them in Welsh, resemble, if we may judge by their titles, which are given by a correspondent in the "Gwladgarwr" (vol. vi., p. 144), the Mysteries which preceded the establishment of the Church of England in the most civilised parts of Europe. One of his dialogues between a Protestant and a Dissenter; another between Pleasure and Misery. The dates of these are 1763 and 1767: he afterwards advanced nearer to the regular drama, for, in 1812, we have the "Ysori Richard Waddington," or a figure of an Archbishop of Canterbury, with an original title, "The History of Whitlington," third Lord Mayor of London.

The Cambrian Shakspere deserved his title much less than Dr. Owen Pughe would that of the Cambrian Milton. Dr. Pughe was equally eminent as an antiquary, a lexicographer, and a poet. His principal work of the latter description is his "Coll Gwyna," a translation of the "Paradise Lost," which has already been mentioned as distinguishing itself for throwing off the yoke of "Cymhangelid." He also translated the "Dafydd Ddu," or the principal bard, "Nugadarn," or "Hu Gadarn," or "Hu the Mighty," commemorative of the exploits of the prince of the Gwynedd, famous in tradition, who conducted their migration from "Deforba," or "Summons," to the county of Merionethshire, in 1759, and died in 1835, in his native county, to which he had returned after a long residence in London.

Mr. Edward Jones, who was appointed bard to the Principality of Wales in 1783, was also a native of Merionethshire, and died in London in 1824. His "Relics of the Welch Bards" are valuable from the specimens they contain both of the poetry and the music of Wales, but the English translations which he gives of the Welch passages are by far the most judicious and correct of any. Mr. Jones, who was the author of "Welsh Melodies," with poetry by Mrs. Hemans, has superseded much of the utility of Jones's work for the musician; but we understand that a new edition of the "Relics" has either appeared, or is about to appear under the superintendence of Mr. Pentrechwyth.

The Welsh Paranaus of the nineteenth century is crowded with candidates for fame, many of whom have received the highest praises from Cambrian critics. It may be observed of some of the best producing pieces, many of them on the casual occurrences of the day or on subjects dictated by societies. Our limits will not allow us to give more than very brief notices of the most copious. As usual North Wales is the most active and most fertile in the production of the national language. In Denbighshire and the adjoining parts the most prolific county is Denbigh, the bard of Edward Jones, (by his bardic name Dewi Wyn), was born in Caernarvonshire in 1784, and died in 1841, after a life spent in rural pursuits. His poetical works were collected in one volume, and published at Chester in 1841, under the title of "Blodau Arfon," or "Flowers of Arvon." The Rev. William Williams (Gwilym Caedelyn), of Caernarvon, is the author of an interesting volume of poetry, entitled "Grawn Awen," or the "Treasures of the Muse," and Mr. David Thomas (Dafydd Ddu Eryn), of Caernarvon, who was drowned in 1822, had produced some poems, the merit of which has been lost occasion of their publication. A Life of the author prefixed. Mr. David Richards (Dafydd Idris), of Denbigh, is the author of four or five volumes of poems, which enjoy the reputation of being some of the best in the language. The Rev. John Richards, of Llanerchymedd in Anglesey, and the founder of Sunday-schools in that island, who died in 1832, in his seventy-sixth year, was also a poet. Mr. Evan Jones (Gwennfrod), of Holywell in Flintshire, who went to America in 1832, and died in Alabama in 1834, in his twenty-fourth year, had translated Thomson's "Seasons" and "Gardens and Villas," and published, in 1831, a small but useful volume, entitled "Cymraeg Awon y Clym yr Alban, or the Beauties of Welsh Poetry." In South Wales the principal seat of the "Aw'en" is Merthyr Tydvil. Tilais Williams, the son of Iolo Morganw, has followed the example, instead of the advice of his father, who, like Sir Walter Scott, was anxious that none of his sons should be poets. He is now a schoolmaster at Merthyr, which being a busy town, gave him much more practice in the business. John Thomas, who is said by his admirers to be the best minstrel in South Wales, and of a third, in the inkeeper Edward Williams (Iolo Mywny), Two of the most distinguished minstrels in South Wales are the Rev. Daniel Evans, of Jesus College, who assumes the name of Daniel Ddu o Gerdrigion, and the Rev. John Jones, of Christ Church, who takes that of Tegid. A collection of poems by the former was published at Cardiff, and the latter at Oxford. The title of the "The Poet's Vineyard": the productions of Tegid must be sought for in numerous periodicals; they are noted for grace and neatness of expression. There is one Welsh poet of note in London, the Rev. James Hughes, of St. John's, minister of Jewin Crescent Chapel; who is also the author of a popular exposition of the Old and New Testaments.

The prose literature of Wales in modern times may be said to commence with the translation of the Bible, the work of which is carried on by societies. It was enacted by Parliament that the "Bible, Testament, and Common Prayer" should be translated into the British or Welsh tongue; should be viewed, perused, and allowed by the bishops of St. Asaph, Bangor, and St. David. The translations were published by the London, Edinburgh, and Dublin, of Dr. Morgan, and used in the churches by the Ist of March, in the year 1786, under a penalty, in case of failure, of forty pounds, to be levied on each of the above bishops. In 1857, one year after the time fixed by the Act to profess the language, the works were again printed, more than twenty years elapsed before there was a version of the Old. The reasons are probably those conjured by Llewelyn, that the time allowed was too short, the persons that could be employed upon it too few, the penalty allowed the public too little, the expense of the work too great, and that the body of men who have had no funds assigned them to carry on the work, to go to the expense of procuring a translation, which must have cost each of them much more than forty pounds. In fact the whole affair seems to have dropped to the ground, and nothing of any consequence has been done for the Welsh language since 1788, was executed by Dr. William Morgan, vicar of Llan Rhaiadr, in Denbighshire, not in consequence of the Act of Parliament, but because he felt the necessity of the work. Morgan was promoted, in 1857, to the see of Llandaff, is translated, says Llewelyn, to St. Asaph, and in 1801, to a better place." His successor at St. Asaph, Dr. Parry, published, in 1820, a revised edition of this Bible, with such considerable alterations that it might almost be considered a new translation. Though the New Testament continues in use to the present day. Owen Pughe mentioned, in 1802, that nineteen editions of the Bible, consisting of upwards of a hundred and thirty thousand copies, had circulated in Wales. Llewelyn published, in 1788, "A Gentleman's History," a work which appears to have no relations and editions of the Bible," which is very amusingly written.

The early editions of the Welsh Bible were printed in London, and the introduction of typography into the principality was exceedingly slow. Cotton, in the "Typographical Gazetteer," states that the earliest information he possesses on the subject is from one of the Martin Prebyslute tract in Queen Elizabeth's reign, in which mention is made of the "knack" that well the printer, who printed the tract," have been the first to be printed in Wales. W. Owen Pughe says nothing more has ever been discovered of this printer or his books. In the "Gentleman's Magazine" for August, 1821, it was observed, by a correspondent, that "from the invention of printing downwards to the present day, the circumstances attending the diffusion of Welsh literature, that there was not a printing-press in the principality until the year 1734, or thereabouts, when a temporary set up by Mr. Lewis Morris, of Bod-Edeyrn, in Anglesey. Of the printers, none of which is known to be on the books of Mr. Thomas Parry, the most important add is, still in being at Treveirg, near Llanmartan."

Affairs seem to have continued in this apathetic state till the close of the eighteenth century, when two principal engines were set in motion which have since changed the whole face of literary affairs in the principality—the one the establishment of periodicals, and the other the establishment of societies. The first Welsh periodical appeared about the year 1770; its title was "Eurfrawga Cymraeg," or "The Welch Treasure," it was edited by the
Rev. Peter Williams, of Caermarthan, and Evan Thomas, a Welsh poet from Montgomeryshire, were the first of these to appreciate the list of eight periodicals then in existence given in the preface to the second volume of the 'Transactions of the Cambro-Briton' in 1824, and the statement in a number of the 'Cambrian Quarterly Magazine' for 1851, that at that time not less than fourteen periodicals in the Welsh language issued monthly from the press.

The principal now or lately in being are—1, the 'Seren Gomer,' or 'Star of Gomer,' which, first commenced as a newspaper, has since 1810 appeared at Caermarthan in the form of a periodical, containing biographies, reviews of books, &c., a tolerably complete view of the passing literature of Wales, but is perhaps on the whole rather a religious than a literary periodical. It was founded by the Rev. Joseph Harris of Tenby, a popular writer and author of several works both in English and Welsh, who died in 1825, and whose son, John Harris (Jeuan Glyn Tawr), who died in 1824, in his twenty-first year, was a poet of merit. 2, 'Y Gwaigddwr,' or 'The Patriot,' published at Aberystwyth since 1833 to 1841, was of a more exclusively literary character than the 'Seren Gomer.' Its first editor, the Rev. Evan Evans (Jeuan Glyn Gereiniog), a native of Trefriw, near Llanrwst, is a distinguished bard, author of the 'Seraph,' and officiates as a member of the local body over the poetical part of their national library. 3, the 'Clychgrawn,' or Welsh 'Penny Magazine,' the publication of which was commenced in January, 1834, and discontinued in June, 1835, consisted principally of translations from the works of the Useful Knowledge Society or of literary and miscellaneous papers, and was published under the Society's superintendence. It was edited by the Rev. John Blackwell, of Mold in Flintshire, and late rector of Menneihad in Cardigan, a distinguished member of the society, and was intended partly to the prevalent taste of the Welsh public for secular publications. 4, 'Y Drysorya,' or 'The Treasury,' edited by John Parry, under the superintendence of a committee of the Calvinist body, published since 1830 until 1833, was intended to be distributed mediately to the poor, but it did not attract many readers. 5, 'Yr Aithr,' or 'The Instructor,' edited by H. Gwamein, and published at Llanidloes since 1836, and 6, 'Y Dwyygiw,' or 'The Reformer,' conducted by a committee of ministers of the Independents, commenced at Llanelly in the same year and lives there to this day. 7, 'Yr Haul,' or 'The Sun,' and 'Y Gwybeddwyd,' or 'The Sentinel,' and others of inferior note. All of the existing periodicals give a summary of the occurrences of the day, and we believe that all are of the liberal or reforming side in politics, and none of them have any object but to be read by their readers, or to answer the purposes for which they are published. These periodicals now compose almost the whole of the current literature of Wales. As in poetry scarcely a single Welsh author has been found to venture beyond the limits of a short lyric piece, it seems as if the confined limits of the metrical form are too much apathy sufficient for the ambition of their writers in prose.

This is perhaps the most appropriate place to mention that some of the most valuable information in print with regard to the literature of Wales is comprised in three periodicals in the English language, devoted exclusively to Welsh subjects. The earliest of these, the 'Cambrian Register,' extends to three volumes, the first of which was published in 1796, the second in 1798, and the third in 1800. It has been the periodical publication more rich in original information of interest. The letters of distinguished Welsh antiquaries, which form a portion of its contents, are particularly entertaining; and a history of Welsh poetry, which appears in the general, is a respect to be admired. The book is entitled 'Cambrian Register,' but the design as yet remains unaccomplished. It is probably reserved for the achievement of the 'Society for the Publication of Antient Welsh Manuscripts,' which was founded at Abergevenny in 1857, and is announced in its report for 1858. The following pullicate 'The Cambrian Register' a great deal of the valuable work of its recent authors than will be found elsewhere. Dr. Owen Pugh was one of its principal contributors. 'The Cambro-Briton and General Celtic Repository,' also in three volumes, published at Carmarthen in 1818-22, has been very valuable, and indispensable in the library of every one who wishes to become acquainted with the history, the antiquities, and the literature of Wales. The 'Cambrian Quarterly Magazine,' in five volumes, published from 1823 to 1833, is unfavourably distinguished from its predecessors by the admission of articles of mere light reading; but some of them are of an extremely valuable and interesting character, and the attempts to trace the literature of ancient Britain,' by the Rev. Thomas Price, inserted under the signature of Carnhuanwae, is a signal ornament to the work. The eleven volumes of these periodicals should find a place in every public library in England, or even in any private collection of modish taste, where the literature of ancient Britain and the modern literature of a considerable portion of it, are not objects of absolute indifference. They comprise almost all the information on the subject at present accessible to the English reader—deficient as it is in fact, in the attention, however scattered over many volumes; but the English can scarcely complain of the deficiency of a general and satisfactory survey of the literature of Wales, while as yet they have nothing of a similar kind for their own country.

The societies of Wales, though not very successful at first, have been in the long run most effectual in reviving the taste for its literature and the study of it. The earliest of them seems to have been the Cambro-Briton (Associates) or Metropolitan Cambro-Briton, which was originally established in London in 1751. Its immediate purpose was to cultivate the language and literature of Wales, and its members were also to contribute their endeavours towards the instruction of the ignorant and the relief of the distress of the poor. It contained among its members a great number of books and MSS. relating to Wales, which were afterwards deposited in the library of the Welsh school in Gray's-Inn Lane, but did little else in a literary point of view, and after an existence of thirty years appears to have gradually expired. It was succeeded by the Cambro-Briton Society, founded by the Gwyneddigion, or Society of the Inhabitants of Gwynedd, or North Wales, which was established in London in 1771, by that indefatigable patriot Owen Jones. It has been a land of publication of various literary works connected with the principal, but its chief aim is to keep alive the attachment to the national music and poetry. With this view it has revived the ancient congreses of the bards, and conducted the famous 'Mynwent' of the society. It offers a national instrument, the harp, and the writers of the best Welsh poems on subjects selected annually for the occasion. The London Cymrameiddigion Society, founded in 1795, was intended to place the natives of Wales in communication with the English, and, in respect of the opportunities of acquiring useful knowledge; and for this purpose its meetings once a month were to be devoted to the delivery of lectures in the Welsh language on scientific and useful subjects. But the object has been already mentioned, however that one of the last public acts of this society has been to reward the Rev. J. Bray for his 'Essay on the Means of Promoting the Literature of Wales,' in which he recommends the establishment of a society for preserving the ancient system of language among the Welsh. The second 'Cymraddoriaid' Society was formed in 1823, at a meeting held at the Freemaasons' Tavern, and has similar objects with the first. It commenced the publication of its 'Transactions' in 1822, and some parts have since been issued, but they have not as yet reached to the extent of two volumes octavo. The library of the Cambro-Briton contained the manuscripts collected by Owen Jones for the continuation of the 'Mwynyn Archeology,' and has been the following publication of its recent contributions to a library of Welsh history, 'The Laber Landavensia,' or the Antient Register of the Cathedral Church of Llandaff, in Latin and English, under the editorship of the Rev. W. J. Rees, and the 'Heraldic Observations of Wales,' the 'Lives of the Welsh Eirioms,' and other valuable publications that have recently been made in London, chiefly, we believe, by Mr. Hugh Williams, to found a Cambrian Library, or collection of books in Welsh or relating to Wales—a very desirable object, and one that might be effected
at a comparatively small expense, if taken in hand, as it now appears to be, with judgment as well as zeal. It is probable however that in a short time a collection of Welsh literature much superior to any that has hitherto been seen will be formed at the British Museum. The Cymrnodorion Society of the University of Cambridge has also, under the presidency of Dr. Dyce (July, 1843) come to a resolution to present to that establishment their separate collections, with the view of rendering them more generally accessible to the public. The Welsh manuscripts at the Museum were already of considerable interest, and this additional collection will decide at the head of all the kind: in the printed book department the accession will probably have a similar effect.

The expert opinion of the Gwyneddigion at the Aberystwyth Literary and Scientific Institution, who have been inquiring into the Welsh language and literature, is that the collection is a very valuable one, and that the addition will probably have a similar effect. The Welsh manuscripts at the Museum were already of considerable interest, and this additional collection will decide at the head of all the kind: in the printed book department the accession will probably have a similar effect.

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As those and but the king was also frequently seen in Suabia. Some of the tents were divided by partitions, and the hornier was produced by the secretion from the walls of the cysts. These horns mainly grow on the forehead or some part of the scalp. They are generally small, but instances are on record of their being eight or nine inches long and two or three in circumference.

In ordinary cases the cyst has only one cavity, but it does not infrequently happen that there are partitions in it, dividing its interior into cells of different sizes. The contents of the body of the cysts vary, some are filled with a thin, fetid, brown fluid, mixed with flakes of the fibrinous parts of the blood; some contain serum; some a matter of gelatinous consistence; some a calcareous matter; some a black fluid; and some a mixture of a mucusy and mucous matter. These containing hair are mostly found in the neighbourhood of the eyebrows or eyelids.

On dissecting these tumours, some part of their surface is found firmly adhering to the skin, while other parts are covered by a clear and thin membrane, always more or less embedded in cellular membrane. In some cases these cysts are congenital, and persons who have them are frequently troubled with a great number in various parts of their body.

In the treatment of them two modes may be had recourse to; by the one by puncture, the other by removal. When the cyst is small and presents a small black point on its centre, it may be opened and the contents pressed out, when it will sometimes get well. But it frequently happens that the pus will not be discharged by the incision, and that the inflammatory action is the result, so that painful suppuration occurs, and life is put in danger, and sometimes a bleeding fungus has protruded itself through the aperture. The suppurated matter is then removed with the knife, where their situation will permit of it. When this is done, the cyst may either be dissected out entire, or it may be cut into two halves, and each half may be dissected out separately. In both cases great care should be taken to remove the whole of the cyst.

WENCESLAUS, or WENZEL, emperor, or more correctly king, of Germany, the eldest son of the emperor Charles IV., of the house of Luxembourg, was born in 1361. Charles intended to intrust the education of Wenceslaus to his personal friend Petrach, but the post declined the honour, and the young prince was instructed by other teachers. The system of education, which was planned by the emperor himself, was bad; and the consequences were that Wenceslaus became unfit for the high post for which he was intended. At the age of twelve, he was crowned king of Bohemia; at sixteen, he was invested with the margraviate of Brandenburg; and at sixteen, he was chosen king of the Romans. From the accession of Rudolph I., in 1273, no Roman king had been chosen or crowned without the power of the investiture in the order. The latter is the most important of the great possessions, and in the hands of the emperor, for the king of Bohemia had no power to confer it. The opposition to this was, that the election of the Roman emperor was not a matter of descent, but of election by the barons, and that the Romans were free to elect whatever they pleased. The result was that the Roman emperor was at the mercy of the barons, and that he had no power to impose his will on them. The barons were, therefore, determined to make the election of the Roman emperor a matter of descent, and that the Romans were free to elect whatever they pleased. The result was that the Roman emperor was at the mercy of the barons, and that he had no power to impose his will on them. The barons were, therefore, determined to make the election of the Roman emperor a matter of descent, and that the Romans were free to elect whatever they pleased. The result was that the Roman emperor was at the mercy of the barons, and that he had no power to impose his will on them. The barons were, therefore, determined to make the election of the Roman emperor a matter of descent, and that the Romans were free to elect whatever they pleased. The result was that the Roman emperor was at the mercy of the barons, and that he had no power to impose his will on them. The barons were, therefore, determined to make the election of the Roman emperor a matter of descent, and that the Romans were free to elect whatever they pleased. The result was that the Roman emperor was at the mercy of the barons, and that he had no power to impose his will on them.

The wealth of Charles, who is said to have given one hundred thousand gold guilders to each of them, besides estates and other advantages, and thus Wenceslaus was chosen king at Frankfort in 1376.

Wenceslaus succeeded his father in 1378. On his deathbed Charles said to his friends and followers that the lands for which they had made the king of kings. Be peaceful, and never try to obtain by war what thou canst obtain by peace. Do honour to everybody who deserts it; be a friend of the pope, the priests, and the Germans: thus you will reign in peace. The latter was the advice of Charles, but Wenceslaus did not follow them. The dominions of Wenceslaus were, the kingdom of Bohemia, with the Free State of Silia, the Upper Palatinate, and a great number of small fiefs over all Germany. His brother Siegmund was made margrave of Brandenburg and Bavaria, and Wenceslaus had ceded to him, and became afterwards king of Hungary; his brother John held WurtzBURG as a free city of Bohemia; his cousin, John of Luxemburg, was margrave of Moravia, which was a fief of Bohemia; the duchies of Luxemburg, Limpurg, and Brabant, which were possessed by an uncle of Wenceslaus, whose name was likewise Wenceslaus, were to return to him after the death of his uncle. The wife of Wenceslaus, Jane of Bavaria, was the sole heiress of her uncle, William of Bavaria, in his counties of Holland, Zell, and Hainault. The Netherlands under one head, and the foundation of a powerful state in the north-eastern part of Germany, two plans, the separate realization of which was afterwards possible with the help of the princes of Prussia—these two plans, and still more the change of Germany into an hereditary monarchy of the house of Luxemburg, might have been carried into effect by Wenceslaus, if he had acted with prudence, forbearance, and firmness.

The state of the empire was this:—After the death of Pope Gregory XI., at Avignon, in 1378, the Roman cardinals chose Urban VI., who was to reside in Rome. The French cardinals however chose Clement VII., who maintained himself in Rome. The dispute was at length settled by the election of Urban VI., and took up his residence at Avignon. Wenceslaus recognised Urban VI. as pope, and in return received the papal recognition of his election to the imperial throne, which he had not yet obtained. This policy, however, was disapproved of by Charles V., and, after him, Charles VI., from which however he disentangled himself by an alliance with King Richard II. of England, in 1381, who married the emperor's sister, Anne, and who likewise recognised Urban VI. As a successor of Clement VII., which was at the same time requested to be by the pope, the emperor was unable to quell them, and he only quieted Clement VII.'s adherents among the princes of the empire by granting to them several important privileges. To these was added the right of the imperial rights over the free cities of Suabia (for a large sum of money); but these cities, fearing that they would lose their freedom under Leopold, concluded an alliance to which a great number of towns and free cities on the Rhine adhered, and they defended themselves against the duke. Some other princes of Southern Germany also tried to obtain imperial rights, and then gradually the sovereignty over other towns and free cities, and for that purpose they concluded a union, which was headed by Eberhard, count of Wurtzburg and Leiden, duke of Austria, who had very extensive possessions in Suabia. The consequence was a dreadful civil war between the princes and the citizens, whose party was strengthened by the towns and cities of Switzerland, which was then a prince of Germany, and which had been invaded by the Jusus of Austria. The war was terminated by the battle of Sempach (9th of July, 1386), where Duke Leopold of Austria was slain, with 860 counts and knights; but in Suabia the citizens were routed at the battle of Désingen (24th of August, 1388) and in several other engagements, in which the citizens were on the general side, but whose measures were partial, and had no effect. In order to please the victorious princes, he cancelled the heavy debts which they had contracted by borrowing money from the Jews, and many other instances in Germany, England, and France: 2000 Jews were killed by the mob in Prague. For some time the emperor, who seldom left Prague, succeeded in maintaining peace in Bohemia and other parts of his own dominions but he abandoned himself to
Lamarck arranges Scalaria between Vermeius and Delphinia.

Cuvier observes that the Scalaria, which he places between Turritella and Cyclostoma, have, like the Turritella, the spire elongated into a point; and, like the Delphinia, the mouth completely formed by the last whorl; this mouth is moreover surrounded by a bourrelet, which the animal repeats at intervals, so as to form a succession of step-like elevations. He describes the animal as having the tentacles and the penis long and slender.

M. de Blainville gives Scalaria its position between Proteo and Vermeius, but wherever the animal repeats at intervals, so as to form a succession of step-like elevations. He describes the animal as having the tentacles and the penis long and slender.

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The state of the Church was still deplorable: Boniface IX., the successor of Urban VI., was pope at Rome, and Benedict XIII., the successor of Clement VII., was pope at Avignon. The doctrines of Wickliff had found their way into Bohemia, where they were propagated by Huss; and, on the other hand, Huss was drowned at Moldau, after Wenceslaus had tortured him with his own hand (1389). He showed himself faithless to his own brothers, and Jobst of Moravia, who surprised the emperor and put him in a prison, in order to obtain justice from him. Jobst restored his captive to liberty by the summons of the other princes, who would not allow the head of the empire to be kept a prisoner, though this head was unworthy of his exalted rank. As Wenceslaus resided at Prague, and seldom appeared in public, his brother Siegmund, who was appointed vicar-general, was considered the general of the Roman empire, and kept for himself nothing but the imperial name.

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Mr. G. B. Sowerby, jun., has made out at least eighty recent species, the numbers being, generally speaking, pretty nearly equally divided between the true and the false Wentletraps; the whole of these will be figured in a forthcoming number of his new and accurate work, three parts of which have already appeared under the title of Thesaurus Conchyliorum.

Habits. Locality. &c.—Species of this genus, which is marine, have been found at depths ranging from seven to thirteen fathoms in sandy mud. The True Wentletraps are found in the seas of warm climates; some of the false (Scalaria communis, for example) occur in the European seas and upon our own coasts.

Examples, Scalaria communis (Turbo clathrus, Linn.).

Description.—Shell turreted, imperforate, white or pale fuscous; the ribs rather thick, smooth, and suboblique. There is a variety of this species with the shell rather longer, rose-violaceous, and with purple-spotted ribs. Length of the common variety about 16 lines, of the rose-violaceous variety 17 lines and a half. (Lam.)

Scalaria pretiosa (Turbo scalaris, Linn.; Actia scalaris, Leach).

Description.—Shell conic, umbilicated, contorted into a loose spire, pale yellow, with white ribs, the whorls dis-jointed and smooth, the last ventricose.

Locality.—East Indian seas; China.

This shell was the one selected after by collectors, who was known among the French as the Scala, La vraie Scala, and Le véritable Escalier; among the Germans as the Rechte Wendeltreppe, among the Dutch as the Oprechte Wendeltrap; among the Belgians as the Wendeltreppe, and to the English as the Wendeltrap, Wendeltrap, and Royal Staircase.

The specific name given to it by Lamarck was at one time well deserved on account of its rarity and the great price which a fine specimen would bring in the market, especially when it exceeded two inches in height: such a specimen has been sold in former days for 2400 livres, or 100 lories! But those times are gone by; the shell is no longer rare, and good specimens only fetch shillings where they once brought pounds. The very fine example however still commands a considerable sum. That in Mr. Bullock's museum, supposed to be the largest known, brought 27l. at his sale, and was, in 1815, estimated at double that value.

Fossil Scalaria.

The number of fossil species (tertiary) recorded by M. Deshayes, in his Tables, is twenty-two; we have above noticed those recorded by him as recent and fossil (tertiary). Mr. Lea has described among others the genus Scalaria, and quenquefaæcata, from the Clifton Beds (tertiary of Alabama). Mr. Pitton figures one, Scalaria pulchra, from the strata below the chalk (Blackdown).

WENTWORTH, THOMAS. [STAFFORD.] 

WOEBLY, [Herefordshire.]

WERECH. [WERCHEL.]

WEREJA. [Moscow.]

WERN, OLAF. [VERELIN, OLAF.]

WERNER, ANNA MARIA COTTWALD, was born on the 25th of September, 1750, at Welslau on the Queis, in Upper Lusatia. His father was superintendent of a foundry at that place. He gave his son minerals as playthings, and young Werner thus became acquainted, says Cuvier, with the names of their various shapes and the letters of the alphabet. He received his early education at the school of the orphan asylum at Bunzlau in Silesia, but was afterwards placed at the celebrated school of mines at Freiberg in Saxony. He soon formed the resolution of entering in the mining establishment at that place; and as the regulations required a licentiate's degree in law before admission, he studied jurisprudence for three years at the university of Leipzig, but at the same time continued to cultivate a knowledge of mineralogy. At that university, Werner published three memoirs of a geological character, in a year, four years of age, a treatise on the external characters of minerals, in which he proposed a methodical and precise language to describe the sensible qualities of mineral substances. By this work, consisting of a few leaves, Werner, says Cuvier, rendered a service to mineralogy analogous to that which Linnaeus had rendered to botanical science by the terminology made use of in his Philosophia Botanica, and effected a revolution in the science of mineralogy. He here expressed his ideas on the deficiencies existing in mineralogical science, and on the means of removing them. He observed that the external characters of minerals had been neglected in their description; and at the same time he showed that these characters were not to be applied to the systematic distribution of mineral substances, but to determine the conception of their exterior, and to fix a method of describing them; that the external characters, previously employed by mineralogists, were very indefinite, and that the perfection and utility of the external description of minerals depended on a complete definition and arrangement of the external characters. This work of Werner soon became popular in Germany, but it was several years before it became more extensively known. A French translation, by Picardet, appeared in 1790, and one in English, by Mr. Weaver, was published in Dublin in 1805. In his native country it appears to have earned Werner a reputation, for in the year following its publication (1775), we find him appointed professor of minerals in the School of Mines at Freiberg, and inspector of the mineralogical cabinet at that place. He held these offices for seventeen years.

In 1780 Werner published a translation of Cronstedt's Mineralogy, with notes, and in the following year a catalogue of the privately collection of minerals of Papst d'Ohain. In both these works he introduced his method of distribution and descriptions of minerals according to his terminology, giving the name 'Oryctognosy' to the study, while he termed the knowledge and science of the positions of minerals and fossils in the crust of the globe, and the classification of rocks and the inferences to be drawn as to the period and circumstances of their origin, 'Geognosy.' Although in the former department Werner has done great practical service, it is in connection with the latter division, and his theory of geology, that his name must be always associated. 

In 1787 Werner published a little work on the classification of rocks, 'Kurze Klassifikation und Beschreibung der Vol. XXVIII.'
der verschiedenen Gebirgsarten, 'a brief but valuable arrangement and description of rocks,' says Dr. Pitton. The author there points out the mineralogical distinctions of rocks, but the work contains none of Werner’s theoretical views respecting formations, and the classification he has given in it was materially altered by him at a subsequent period. Werner professed to teach a theory of the formation of the primitive and other rocks by chemical precipitation from water; and in the same year, 1767, from an examination of the Erzgebirge (or Ore-Mountains), in Saxony, and the basaltic rocks of the neighbourhood, he also made an application of this doctrine whilst the origin of trap rocks. Raspe, a German, had as far back as 1768 described the basalt of Hesse as of igneous origin. To Werner’s limited sphere of observation, his erroneous opinions on this and on other subjects may in some measure be attributed. He found the basaltic mists of Saxony and of Hesse forming the summits of the hills in tabular masses, and not occurring in dykes and veins, or extending downwards into the valleys, and hence some of the strongest proofs by which these rocks are now universally admitted to be of igneous origin were present in the phenomena which came under his actual observation. But many even of the appearances in the neighbourhood of Freiberg, Werner appears to have overlooked or misconstrued. Thus within a day’s journey of his school, the porphyry, cut by granite, has been seen with its ancient veins or dikes through strata of the coal formation, but to relieve them in mass. The granite of the Harz mountains, on the other hand, which he supposed to be the primitive mass, is now thrown out and breaches the other beds, penetrating even into the plain (as near Goslar); and still nearer Freiberg, in the Erzgebirge, the mica slate does not mantle round the granite, as was supposed, but abuts abruptly against it. (Leyel.)

These views of Werner were soon followed by the promulgation in his lectures of his Theory of Formations, which, of all that he taught, we are inclined to select as his greatest achievement in the science. His ideas respecting the division of rocks into great classes we have seen to be erroneous, but he was right in regarding the masses or strata that constitute the surface of the globe present themselves in groups or assemblages, the members of which are generally associated wherever they occur, and are so connected as to exhibit a certain unity of character. Thus he terms the formations, and taught that the exterior of the earth consists of a series of these formations laid over each other in a certain determinate order. This was a most startling announcement when we consider what a small portion of the globe had undergone a change of this kind, but he was not the first to have been an author of this bold theory had little practical acquaintance. But if this reflection increases our surprise, it must also increase our admiration for the sagacity with which announced such an idea, combated and resisted at the time, now receives the assent of all geologists, and which extended observations in all parts of the globe confirm. Ideas of this magnitude are, says Cuvier, the true characteristics of genius.

Unfortunately, however, but as the natural consequence of his notions respecting basaltic and other rocks, now deemed of igneous origin, he included the latter among his series of constant universal formations, and it is almost miraculous that this part of his theory has not been effectually disproved as the rest has been confirmed. Werner taught that these formations, including his primitive rocks, as well as his flats or secondary rocks, were produced by a series of precipitations and depositions from the ocean; whilst the igneous, which have covered the globe, and, existing always more or less generally, contained the different substances which have been produced from them. In almost necessary connection with this hypothesis, he supposed a number of successive and parallel changes in the level of the sea, of very great extent.

In November, 1791, Werner published his ‘Theory of the Formation of Veins,’ which he had also taught for some years previously in his lectures. In this work he conjectured the existence of the fissures by supposing mountains to have been formed in the manner above stated, namely, by deposition from the sea of beds one above another, and that the mass of these beds being at first wet, and possessed of little tenacity, the mountain yielded to its weight, cracked, and sunk down on the side where support was wanting; and that as the waters also, which assisted in giving them support, began to lower their level, the mass would more readily yield to its weight, and continue to sink till it was broken into fragments. The shrinking of the mass in drying, and the operation of earthquakes, might, he supposed, have further assisted in the production of such rents. Having thus accounted for the origin of the fissures, he believed, and endeavoured to prove, that the veins were introduced into them from above, and that the mass of veins has been formed by a series of precipitations from water, which have filled, in whole or in part, the spaces or fissures; that these precipitations entered by the superior parts of the rents and were directed below, as water is poured in water, generally chemical, which covered the country in which these rents existed. To account for the high degree of crystallization which prevails in the veins, he supposed that the precipitations and depositions which formed them were made with a more gentle temperature than the last produced beds and formations; that mechanical solutions and depositions had disturbed the formation of veins much less than of beds, and that the spaces in which veins are found preserved for a longer time the facility of receiving and retaining different solutions. (Payfair, ‘Edin. Review,’ vol. xviii.)

A French translation of the work, by D’Aubuisson, appeared at Paris in 1802, and an English translation by Dr. Playfair, London, 1803, was intended to accompany the work Werner wrote. It is said he had a most singular aversion to the mechanical act of writing, which he carried to such an extreme as never to reply to letters, and which even deterred him from reading them, lest he should be tempted to make alterations.

In 1782 he was appointed Counsellor (Bergrath) of the mines of Saxony. Von Charpentier held the situation of Captain-general (Berghauptmann) in the same establishment, and there appears to have been a feeling of rivalry between them which lasted to observation. Von Charpentier were principally confined to the practical details of mining. In 1797 or 1798 Werner introduced into his lectures the doctrine of a new class of rocks, to which, as lying between the primitive and secondary or flint, he then the name of tertiary was given by him, and which of the distinct formations or rocks of all these classes to which assigned precise relative places, was between thirty and forty. The establishment of the transition class completed Werner’s labours, and the promulgation and further illustration of his doctrine were attended with success. During this time acquired a great celebrity throughout Europe as the first geologist and mineralogist of the day, and was looked upon as the founder and author of mineralogy as a science. His fame was not so much acquired through his writings as by means of his lectures. Indeed, some of his principal views were only promulgated in this channel. He was an admirable lecturer. One of his pupils describes his appearance in 1799 as very remarkable and striking at the first interview. He was middle-sized, and broad-shouldered; his round and friendly face did not at first sight promise much, but when he began to speak, he at once commanded the most marked attention. His eye was full of fire and animation, his voice from its force, yet its gentleness and the singularly rare, yet weiged; a cautious clearness and the most marked decision in the views he expressed were apparent in all that he said. With all this there was united a good feeling which irresistibly won every heart. In mineralogical classification he attached too much importance to the most trivial variations in the mixtures of colours occurring in minerals, all the characters of which were classified with extreme minuteness, and every instance of deviation from his arrangement, and every case of doubt, vexed and perplexed him; and yet, in the most refined figures, the same formula in the arrangement of his crystals, afterwards so successfully adopted by Hallé, yet the crystalline structure, the number of cleavages, and their relative position were
materials in Werner's classification. Whether, under his instruction, undertook a mountain expedition, received an
extremely minute plan according to which he was to
make his observations. Every deviation, even the slightest,
from the rules thus laid down, and every neglect of any
portion of them, was severely blamed. It was necessary
that he who wished to derive advantage from Werner's
instructions, should enter into himself of the
whole system was so intimately linked together, and
the various elements of discrimination in mineralogy were so
closely united with the mode of observation in geology,
that the disturbance of any of them rendered all the
other useless and void.

(Professor Steffens, Woch Erlebte.)

He considered minerals under their chemical, economic,
and even geographical aspects, and he arranged his
collections under these different modes of treating the
subject. From this, he once heard, devoted them to or
as the business of their lives.

(Cuvier, Eloge de Werner; Lyell, vol. i.)

This extended and popular treatment of the science,
struck some, while others to whom the love of science
was a sufficient inducement, became
his pupils from the connection that his lectures, from the
situation he filled, necessarily had with mining. Among
his pupils or attendants on his lectures may be
enumerated Alexander Humboldt, Von Buch, D'Aubuisson,
Junker, Freiherr von Wrangell, and others.

The saucy plains of Tartary and Africa, he would say, retained their inhabitants
in the shape of wandering shepherds; the granite moun-
tains and the low calcareous and alluvial plains gave rise to
the character of the remaining offshoots.
The history even of languages, and the migration of tribes,
had been determined by the direction of particular strata.
The qualities of certain stones used in building would lead
him to descant on the architecture of different ages and
nations, and the physical geography of a country fre-
quently invited him to treat of military tactics.
The charm of his manners and his eloquence kindled enthusiasm
in the minds of his pupils; and many who had intended
at first only to acquire a slight knowledge of mineralogy,
were afterwards employed between his walls. And
he would often urge his pupils that recourse must be had to acquire a perfect
acquaintance with the details of their preceptor's views, and
the gradual extension of his theories and discoveries.
That Werner's powers of external discrimination were
extremely acute, we have seen in speaking of him as a
mineralogist, and his talent and tendency for classify-
ing were in his mineralogical studies fully fed by an
abundant store of observation; but when he came to apply
them in his geological studies to a system, so fostered, appears to have been too strong
for the collection of facts he had to deal with. As we have
seen, he promulgated, as representing the world, a scheme
collected from a province, and even too hastily gathered from
the province of Saxony, in which he saw
some measure compensated for other deficiencies, and
enabled him to give the character of a science to what
had been before a collection of miscellaneous phenomena.
The ardour of system-making produced a sort of fusion,
which, however superficial, served to bind together the
mass of incoherent and mixed materials, and thus to form,
though by strange and anomalous means, a structure of no
small strength and durability.

(Whewell, History of the Inductive Sciences, vol. iii.)

Elected him one of their eight foreign associates, and
the leaders of the French republic sent him a diploma as

The latter honour perplexed Werner, deeply
suffered. He was so devoted to his country that he never
married, and, though the most tempting offers were repeatedly made to him.

Werner suffered for many years uninterruptedly from
a stomach complaint. He was anxiously careful about his
health, was always warmly clothed, and the stove in his
rooms was lighted through the winter. The destitution of
his country, consequent upon its being made the theatre of
the campaign of 1813, seem to have preyed upon his
mind, increased his malady, and produced a complication
of diseases from which he never rallied. In 1817 he
went to Clevey, in the latter honour perplexed Werner, deeply
sufferings. He became worse, and died there on the 30th
of June, in the arms of his sister, in the sixty-seventh year
of his age. Böttiger pronounced his funeral oration: Ritter
delivered his 'Eloge' at the Academy of Munich, and
Baron Cuvier an Academy of Sciences in Paris.

Werner was never married. He had surrendered in his
lifetime the whole of his valuable collection of minerals,
comprising upwards of 100,000 specimens, and also a large
number of Werner's mineralogical medallions, to the
Mines at Freiberg, for 40,000 crowns, a price considerably
below the value; and in consequence of the distressed
state of Saxony at that period, he accepted only a small
part of the reduced sum, reserving a moderate interest
in it, to meet the remaining expenses of his widow. Werner
laid the plan of a work on the mineralogy of the
Saxony, and, on his death, his books and papers were
bequeathed by his widow to the University of Jena.

WERNER GERODE, or STOLLBERG-WERNER GERODE, is a district or domain, with the title of a county, in

Prussian Saxony, the property of Count Stollberg-Werner
Gerode. It is between 90 and 100 square miles in extent, in-
cluding a part of the Harz and the Brocken Mountain, and is
the property of the Elector of Saxony, and is a state
of Brunswick, and the kingdom of Hanover. The
was covered with wooded mountains, round the Brocken,
which is in the centre.

WERNER GERODE, the capital of the county, in 51°
59" N. lat. and 12° E. long. is situated at the northern
part of the Harz, and is traversed by a stream called
the Zillerbach. It is a walled town, with 4 gates, and has a
suburb called Neenscherode. The mansion of the count is
an ancient castle, built on a rock 627 feet above the level
of the sea, and 40 feet below the top of the
Brocken. It is very fine prospect, and contains a library of 30,000 volumes,
including a remarkable collection of 2000 bibles, and the
archives of the county. An extensive park adjoins the
count's residence. The town is a very healthy
district, and is enlivened by being inhabited, of all the offices of the
county, by the influx of travellers visiting
the Harz, and by its woollen and linen manufactories, its
tanneries and brandy distilleries, a paper-mill, several
oil-mills, saw-mills, &c.
The town contains 4 churches, an orphan asylum, a poorhouse, and a gymnasium, and has a
considerable trade in corn. Population 5400.

(Müller, Worterbuch des Preussischen Staates; Hassel,
Handbuch; Brockhaus, Conversations Lexicon; Stein,
Handbuch.)

WERST, or VERST, the Russian itinerary measure,
being 3000 English feet, or nearly two-thirds of a mile.
From the number of vers or versst its third, and also one for every 225 versst, and the result will be near enough to
51° 40' N. lat. and 6° 37'
E. long., at the junction of the Lippe with the Rhine, a
which here forms an island, very strongly fortified, and
a citadel built by the Great Elector. It is a fortress of the
first rank, and has sustained several sieges. Wesel is an
antient town, and was formerly a member of the Hanseatic
League. Wars and other calamities greatly reduced it:
and in 1630 it had only 4000 inhabitants. Since then its
gradually recovered, and the population is above 11,000,
besides the garrison. The town has a gymnasium, a semi-

G 2 6
nary, a commercial institution, a botanic garden, and several schools. There are three German Protestant and two Roman Catholic churches, one French Calvinist and one English church, a synagogue, and numerous public buildings, the most remarkable of which are the large and handsome service-houses, the government-house, the arsenal, and the house of correction. The commerce is considerable. The manufactures are of many kinds: calicoes, linen, woollen cloths, hats, gloves, stockings, leather, tobacco, soap, and spiri-tuous liquors. Hassel says there are 100 distilleries. The inhabitants earn on a considerable trade in corn, timber, coals, potashEs, salt, cattle, wine, brandy, and colonial productions. The harbour is safe and convenient; and there is a bridge of boats over the Rhine, and a standing bridge over the Luppe. A monument in memory of the death of the captain of the gull Schill, who were shot by order of Napoleon, which is erected in a meadow near the town, was dedicated with great ceremony on the 31st of March, 1835.

WESSEL, Upper, is a walled town in the government of Coblitz, on the Rhine, the bed of which is deep and narrower than at any other point. There are two churches and three chapels, of which St. Werner's chapel is worthy of notice. The inhabitants, 2600 in number, are engaged in the manufacture of woollen cloth and the salmon fishery of the river. The town is situated on an island, in the adjacently country. On a steep mountain without the town are the ruins of the great and very strong castle of Schönburg, and below the town the perpendicular Lurley rock, celebrated for the remarkable echo.

WESER, one of the largest rivers of Germany, is formed by the junction of the Werra and the Fulda: the Werra rises in Saxe-Hildburghausen, and the Fulda in the Harz. The course of the Werra is 175 miles, and that of the Fulda 125, to their junction at Hanüversch-Münden, where their united streams take the name of the Weser, which is supposed to be only a corruption of the original name of the Werra (Wiszara, Wizara); it flows westwards, and after a junction of the Harz, forms the westward course of the Elster and the Visurgis. The Weser then passes through the principality of Göttingen (Hanover), the duchy of Brunswick, the principality of Calenberg (Hanover), the county of Schaumburg (Hesse-Cassel), the Prussian province of Westphalia, the Hanoverian provinces of Hoya, Verden, and Bremen, and the territory of the city of Bremen, from which, to its very broad mouth beyond Bremerlehe, it forms the boundary between Hanover and Oldenburg, where it is again divided, possessing both banks of the river, and falls into the North Sea 45 miles distant from Hanover. The course of the Weser from Hanover to the mouth of the Werra: its entire course from Münden is 223 miles. Its principal affluents are, on the right hand, 1. the Aller, with the Oker and the Leine; 2. the Wumm; 3. the Lune; and from the left hand; the Au; 5. the Hunte. The principal towns and ports on its banks are: Münden, Compel, Carlsahfen, Holzmünde, Hameln, Rinteln, Prussian-Münden, Nienburg, Bremen, Elsfeth, Brake, and Bremerhafen. The general direction of its course is from south to north, at first through a mountainous country to the celebrated Porta Westphalica (between four and five miles above Münden), which is a gap in the Stüntel-Gebirge, probably formed by the action of the river, through which it now flows, having Jacobseburg (528 feet high) on the right, and Wesertal on the left; the active jet of the water is 61 feet below the level of the sea. Passing the Porta Westphalica it flows through a wide valley with low banks. The facilities afforded by the navigation of the Weser, as well as of the Werra, the Fulda, and some of the other tributary streams, as the Aller, as well as the officers of the State of the number of the banks, the commercial banks, all the monies of the countries on their banks. The upper and middle portions of the Weser arc indeed often rendered impracticable for months together in the summer time by the sand-banks, and its bed becomes more and more choked by sand, so that large vessels are exposed to danger. Two miles below Bremerlehe a harbour was constructed, in 1816, at the mouth of the river.

In former times the commerce of the Weser was impeded by the numerous tolls levied by the governments of the districts bordering on the Weser. The trade on the banks (there were two bridges near Münden and Elsfeth, at all which toll was levied), by the right of staple claimed by different towns, and by a multitude of vexatious charges estab-

lished by privileges and imperial grants. The princes interested in the navigation of the river attempted by means of conferences, in 1606, 1700, and 1710, to remove some of those impediments; but nothing was effected either then, or when the subject was resumed in 1803. The Hanoverian government was then, in 1814, of effecting some important improvements. At length the Congress of Vienna, having decreed the regulation of the navigation on the German rivers, a commission, consisting of plenipotentiaries from Prussia, Hanover, Brunswick, Hesse-Darmstadt, Oldenburg, Lippe-Detmold, and Bremen, met at Hanover in 1821; and on the 10th of September, 1823, the act for the navigation of the Weser was signed. By this act the navigation of the Weser from Münden to the sea was declared free of tolls; the free ports were created, and the tolls and lands were abolished, and a uniform Weser toll was established, the amount of which was fixed for the whole course of the river. With respect to the commerce of the Weser in general, it embraces chiefly linen-yarn, wool, rape-seed oil, the productions of the Harz, Hanoverian linen, tobacco, leather, English manufactures, train-oil, window-glass, looking-glasses, and all kinds of colonial produce. The city of Bremen has long had for three centuries the first and most important share of the commerce of the country.


WESLEY, JOHN, was the most distinguished member of a family, several of the other members of which how- ever also claim to be shortly noticed, either on their own account or in consequence of their connexion with him. John Wesley was the son of Mr. Samuel Wesley, born under one head, and to take them in chronological order. The Wescleys, or Westleys, as they formerly spelled their name, are said by Dr. Adam Clarke, in his 'Memoirs of the Wesley Family,' to have believed their progenitors to be of English extraction, and of English stock. It is suggested that they might possibly have been of the same stock with the once famous reformer, John Wesselinus, otherwise de Weselis, or Basilius, of Groningen, who died in 1480. (See Biographical Notices of the Rev. Bartholomew Westley, &c., in the Post, and, in 1821, and Wessel.) Supposing the name to be English, or Anglo-Saxon, a doubt has been entertained as to whether it is properly Westleigh or Wolseleigh. There is reason to believe that the family name of Wolseleigh (probably derived from Wolsey's Hall, below, in Northamptonshire), was formerly generally passed into Westley, Wood, in the Athenæ Oxonienses, has a notice of a bishop of Kildare, of the early part of the sixteenth century, whom he describes as Walter Wolsele, generally called Westley; and it is known that when John Wesley was a boy at Westminster School, an Irish gentleman, Garret Wellesley, Esq., of Dungannon, M.P. for the county of Meath, considering the boy to be of his own family, offered to make him heir if he would have relinquished the intention of proceeding to the universities, became ejected from the first of the government; he fled to the United States, there to the late Marques Wellesley and the present duke of Wel-lington.

The Reverend BARTHOLOMEW WESTLEY is the first of John Wesley's descendants of whom there is any distinct record. He was born about 1616; was educated at one of the universities, where he studied both divinity and medicine; became, in the time of the Commonwealth, minister of Charnouth and Catetherton (two adjoining villages near to Dorking), and was ejected from the first of these livings immediately after the second on the passing of the Act of Uniformity in 1662. He continued to reside at Charnouth, practising physic, till the passing of the Five-Mile Act in 1660 drove him, with other nonconformists, to a secluded spot at Pinney, now known by the name of Whitechaple, and there he is believed to have spent the remainder of his days, which appear not to have been many, though we do

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not find the date of his decease stated. ‘He lived several years,’ Dr. Calamy tells us, ‘after he was legally silenced; but the death of his son made a very sensible alteration in the father, so that he afterwards declined apes, and did not long survive him.’

The Reverend John Wesley, M.A., son of Bar-
tholomew, was born about 1630, and studied at New Inn Hall, Oxford, where he applied himself particularly to the Oriental languages, and adopted the opinions as to church and state which he joined the Moravian and the University of the university, the celebrated Dr. Owen, who is said to have shown great kindness for him. After preaching for some time to what was called ‘the gathered church’, at Weymouth, and at the neighbourhood village of Dorchester, he received his ordination, and on 24th December, 1651, ordained deacon, was elected and carried to prison at Blandford, and was exchanged for time; and soon after he got out, the Act of Uniformity deprived him of his living, and left him for several months a wanderer and an outcast. At length, in May, 1663, a passport was given him, and during the time of his residence in the village of Preston, a few miles from Weymouth. At one time he thought of emigrating to Surinam or Mary-
land; but finally resolved that it was his duty to re-
main at home. He continued to preach when he could find a place to do it, often to a crowd of fifty or sixty people, and he eventually united himself as pastor to a small con-
gregation at Poole, though without going to reside among them. He was often apprehended while thus engaged, and, besides being several times fined, was subjected to frequent imprisonment. In 1667 he married Miss Annesley, of her own accord left the Dissenters, and at the early age not full thirteen, after having, as she intimates in the preface, thoroughly examined the controversy between them and the established church. Another daughter of Annesley (who had originally held a living in the church, and was ejected by the Act of Uniformity) was the first wife of the eccentric John Dunton, publisher, and author, in whose curious autobiographical performance entitled his ‘Life and Errors’ there are several notices of his brother-in-law; and Dunton published for Wesley the first part of his octavo, entitled ‘Maggots, or Poems on several subjects’, which appeared in 1695. Wesley, besides being already married to Miss Annesley, appears to have been at this time an established writer, though only anonymously, for the bewellers.

When the Revolution took place, we are told that Wes-
ley wrote a book in defence of it; but as neither the date nor even the title is given, we may be permitted to suspend our belief as to the existence of this alleged work. As it is said to have been dedicated to the king, we may be justly influenced in our decision. The next is that, we are told, the author the living of Ewpton, in Lincolnshire, about 1693, it may possibly have been anything concerning the Revolution, but an heroic poem, in folio, entitled ‘The Life of Christ’, which he published the one year and dedicated to her majesty, and which was reprinted, with large additions and alterations, in 1697.

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Another folio volume of verse, under the title of 'Elegies on Queen Mary and Archbishop Tillotson,' followed in 1685; 'The History of the New Testament in Verse, with 180 sculptures, by Sturt,' 12mo., in 1701; and 'The History of the Old Testament in Verse, with 162 sculptures, done by J. Sturt,' 12mo., in 1704. In 1705 Wesley published a poem on the battle of Blenheim, for which he was presented with a medal by Marlborough, on which he characteristicly inscribed, 'Let him charge one of the regiments then stationed in England, and would, it is said, have procured him a prebend, had it not been for the influence of the Dissenters at court and in Parliament, which was powerful enough not only to prevent this promotion, but also to prevent his being elected to a prebend in the chapel of St. Paul's. In the next reign however he received and held with Epworth the small living of Wroote in the same county. He died 30th April, 1728; and the same year appeared, under the care of his eldest son, his master's degree at Oxford. He had graduated at Oxford in 1703, was ordained to the chaplaincy. In 1724, was ordained to the prebend, and in 1725, and graduated as M.A. in 1726 (pp. 42 and 47). Bouthrey's account, which is probably to be followed down to March, 1726. In the end of the same year he was appointed Greek lecturer and moderator of the classes.

From his earliest years Wesley had been of a serious temper, and more especially from the time of the commencement of his residence at college religious impressions had taken a strong hold on him. It is related that two books in particular, which he read in the course of his preparations for ordination, produced a powerful effect on him—the 'Meditations of Saint Augustine' and the 'Rules of Saint Benedict.'

Wesley's relations to one of his Brothers, Mr. G. G. Wesley, were very reduced, and the latter's account of this period is somewhat slurred. In 1707, he and his brother John, who was then in his twenty-eighth year, were both received into the Society of Dissenters. From this time Wesley began to keep a diary, a practice which he continued to the end of his life. A large portion of this record, under thetitle of 'Meditations,' has been published in a volume, and has been several times reprinted.

Soon after he was ordained, he went to officiate as curate to his father at Wroote, and here he resided for about two years; during which time, in 1728, he received priest's orders from the same presbytery from which he had been ordained deacon. It appears to have been in the end of this year that he was summoned back to college, in consequence of a regulation that such of the junior fellows as might be chosen moderators should perform the duties of their office during two years. In the latter part of this period he was an undergraduate of Christ Church, one of a small association of students already distinguished in the University by the derisive appellations of the Holy Club, the Godly Club, the Bible Moths, the Bible Diggs, the Sacramentaries, and the Methodist. At the same time, their religious enthusiasm only carried them the length of devoting Sunday evenings to the reading of divinity, the other nights being given to secular studies; but very soon religion became the sole business of their meetings; they communicated their views to one another. At their age they were ten years old, it seems, in the system of prayer, meditation, and self-indulgence; in these they indulged to a great and abstracted extent, so that the world such was his character as passed by the most rigid order of monastic devotees. John Wesley appears to have immediately joined this society, which now consisted of about fifteen individuals, of whom the most remarkable, besides the two brothers, were Mr. Morgan, whose mortifications are supposed to have shortened his life, James Harvey, the well-known author of the 'Meditations,' and George Whitefield, who shares with Wesley the fame of having been one of the two chief founders of Methodism.

It was very soon after this that Wesley became acquainted with William Law, the author of the 'Serious Call' and of other similar works; the two brothers used to travel from Oxford on foot two or three times a year to visit Law and their other friends. But they were not of this time, nor of this age. Wesley, at the age of twenty, declined at last to fly. Most of this had happened during the absence of the two Wesleys on a short visit to their parents, in 1732. In these circumstances, when the next year, it was proposed that he should apply for the next presentation to his father's living of Glastonbury, John Wesley came to the conclusion that it was his duty rather to remain at the University, as the field where
his exertions were most needed, and where also they were likely to find the greatest stimulus. Nevertheless a few months after his father's death he was induced to go out with General Oglethorpe to Georgia, where he preached to the settlers and Indians in the colony which the general was founding there. He and his brother Charles, who now took holy orders, sailed from Gravesend 14th October, 1735, in the same vessel with a party of six and twenty Moravians, and on the 6th of February, 1736. Charles returned to England, sent home by Oglethorpe with dispatches, early in the next year; John remained in America till his close. The Moravians had in the meantime begun the affair in which he became involved with Miss Sophia Causton, niece of the chief magistrate at Savannah, whose partiality he so frequently, but whom he eventually, on the advice of his Moravian friends, declined to yield. He was brought to trial for breach of his marriage vows. Wesley's journals or other private papers. As for himself, we are told, he 'kept his word, and cautiously avoided and concealed everything which could bring any inconvenience on this gentlewoman.'

He reached England 1st February, 1736. While he had been abroad, the religious excitement which now began to be generally known by the name of Methodism had made great progress in London, Bristol, and other parts of the south of England, and the management of this new church seemed to have been one of the missions which the Lord had prepared for him. The Moravians, who had broken off his intimacy with Miss Causton, it seems, the plot was revealed to him, under a promise of secrecy, by another young gentlewoman, then also recently married to the surgeon of the colony. 'Sir,' she is made to say to him, 'I have not revealed this to you which I now ashamed to mention. Both Miss Sophia and myself were ordered, if we could but succeed, even to deny your acquaintance. The biographers, we presume, have got all this out of Wesley's journals or other private papers. As for himself, we are told, he 'kept his word, and cautiously avoided and concealed everything which could bring any inconvenience on this gentlewoman.'

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after followed by Wesley at the same place, the neighbourhood of Bristol. The first separate meeting-house for the Methodists was begun to be built in the Horse Fair, near St. James's church, before the 12th of May in that same year. Lay preaching, of which the first example had been set by an individual named Bowers, in Islington churchyard, after a sermon by Whitefield, was, not without some hesitation, sanctioned by Wesley soon after his return; for is not a pleasant sight, in this part of the country, the particular gavoie to Methodism in most people's eyes the distinct appearance of a schism in the church. Accordingly, when, before the end of the year, Wesley's mother pressed his acquiescence in his views, his son Samuel wrote to her expressing the exceeding concern with which he had heard that she had countenanced the spreading delusion so far as to become 'one of Jack's congregation.' The old lady had, like her son John, been decided in a morning from that time continued to live with him, and to attend his ministry, till her death in 1742.

In July, 1740, Wesley solemnly separated himself from the Moravians, with whom he had now come to differ, or rested nowhere, seldom having less on some fundamental points of doctrine; and soon after he had met Count Zinzendorf, the two paring, say his official biographers, 'without the least prospect of a reconciliation.' Their last interview took place in Gray's Inn Walks. His object in this, as in all his dealings with the Moravians, who made the two parties immediately bitter enemies, was followed before the close of the same year by a breach with Whitefield, which however, although it divided the new religionists into two permanently distinct bodies, only excited the one more hatred and mutual regard of the two fathers of Methodism.

From this time Wesley's life was spent in preaching, travelling, writing books, and labouring in all other possible ways for the consolidation and extension of the new church, the management of which he now trusted to his own hands. No man ever gave himself up more entirely to any object, or prosecuted it either more zeal and determination, or more method and skilful management. He met an hour, some one minute, was abstracted from the service of the cause on which he had set his heart; and rarely has any ambition been so well seconded by the other qualities and habits of mind, and, it may be added, of body too, necessary to sustain it and give it full effect. The marriage turned out a very unhappy one: Wesley, who had stipulated that he should not preach one sermon nor travel one mile the less on account of his change of condition, was little at home: the lady became jealous; she and him of his substance, as he states in one of his letters, to his preacher, 'to be a weariness to bad women; and committed sundry other extravagances and outrages. Wesley had high notions of the authority of a husband, and the superiority of his own sex: 'Know you,' he wrote to her, 'that you can never engender me to more, saperme no more, provoke me no more; do not any longer contend for mastery, for power, money, or praise; be content to be a private, insignificant person, known and loved by God and me. Attempt no more to abridge me of my liberty, which I claimed the liberty of God and man; &c., &c. . . . Of what importance is your character to mankind? If you were buried just now, or if you had never lived, what loss would it be to the cause of God?' The end was, that after she had several times run away from him and been induced to return, she repeated the experiment once more, and was not asked to come back. 'Non cem religii,' says Wesley in his journal.
'non dimisi, non revocabo—I did not forsake her, I did not dismiss her, I will not recall her.' This was in 1771. She lived for ten years longer, and died at Camberrill, where a stone is placed at the head of her grave in the churchyard, setting forth that she was 'a woman of exemplary integrity, a tender parent, and a sincere friend.' She bore no children to her second husband.

Wesley died after a short illness at his house in London, on the 2nd of March, 1791, in the eighty-eighth year of his age. His publications are far too numerous for a list of them to be attempted; and even a selection of them: among the most remarkable, besides his Journal, are—a corrected translation of Thomas-à-Kempis, said to have been published by him in 1735, a short time before his death; a collection of such of his sermons as of years, of which however were written by his brother Charles; a History of England; a short Roman History; Primitive Physic; and many short tracts on theological subjects. There are at least two collected editions of his works: one in 32 vols. 8vo., printed immediately after his death; another in 16 vols. 8vo., printed in 1809. The 'Arminian Magazine,' now called the 'Methodist Magazine,' was established by Wesley in 1730, and was conducted under his superintendence so long as he lived.

Some of his sermons have been written of Wesley, the two principal are that compiled immediately after his death by Dr. Thomas Coke and Mr. Henry Moore, to which all his manuscripts were left, and published in one volume, 8vo., in 1792; and that by the late Dr. Southey, in 2 vols. 8vo., in 1820. Prefixed to the latter is a list of the chief printed materials for the biography of this extraordinary man.

The Reverend Charles Wesley, the younger brother of John Wesley, was born at St. Albans, and was educated at Westminster School under his brother Samuel, his school-bills there for several years being discharged by the relation or namesake who, as related above, offered to make him his heir if he would accompaniment him to Ireland. Charles was elected a fellow of Peterhouse in 1731, from this time his history makes part of that of his brother, with whose labours in the diffusion of his religious views and in the establishment of Methodism he was associated from their commencement. It was contrary to the scheme of life he had laid out for himself which he spent his days at Oxford as a tutor, that he was prevailed upon, in 1735, to take orders, and to accompany his brother to Georgia. After their return from America, they had occasional differences upon points both of doctrine and practice, but these were soon amicably adjusted and ended.

Charles was married by his brother, at Garth in Brecknockshire, to Miss Sarah Wynne, a lady of a good family in that county. After his marriage he confined his ministrations almost entirely to London and Bristol. Charles Wesley was married to Mrs. Flora, and his brother to Miss Sarah Moore, in their Life of his brother, 'a remarkable talent of uttering the most striking truths with simplicity, truth, and brevity. He early showed a turn and talent for writing in verse; and most of the new hymns published by Wesley in his various collections were of Charles's composition.' 'In these hymns,' observes his brother, in one of his prefaces, 'there is no doggerel, no botches, nothing put in to patch up the rhyme; no feeble explorers. Here is nothing buried or bombast on the one hand, or low and creeping on the other. Here are no cant expressions, no words without meaning. Here are (allow me to say) both the purity, the strength, and the elegance of the English language, and at the same time the utmost simplicity, the utmost truth, the utmost power, which is a just character of Charles Wesley's poetry, both in his hymns and other compositions. Harmoniously as the two brothers co-operated throughout their lives, they were very unlike in character. Charles appears to have been nature, as it were, a harmonious dike or barrier of affection or love of management and power; and, with all his sincere and fervent piety, so far from any inclination towards asceticism, as to be rather a lover of laughter and other joyous emotions, which his brother counted it almost a sin to indulge. Charles died in London on the 29th of March, 1788. Two of his sons, whom (contrary to his brother's wish) he had educated as musicians, became very distinguished in their profession.

WESLEY, CHARLES and SAMUEL, sons of the Rev. Charles Wesley (see the preceding article), are both entitled to our notice as remarkable instances of a distinct and unquestionable manifestation of musical genius, during almost the earliest period of infancy.

The Honourable Daines Barrington, who has devoted several pages of his 'Miscellaneous Works' to the youthful Wesleys, tells us that on the announcement of the father that the eldest, Charles (born in 1772), could 'play a tune on the harpsichord readily, and in good time, when he was only two years and three-quarters old,' that when he was three years old he was able to take his place on the chair, for fear of his falling. Whatever tune it was, he always put a true base to it. He became a fine performer on the organ and harpsichord; at a time however when the art of playing on keyed instruments, and particularly in England, was far from being so developed as it is at this day, he did not only have a knowledge of the way which is in the present day, and only advancing to that state of perfection which it has since reached. He early in life was brought under the notice of George III., who was much pleased with him, and he had the honour to entertain the king, in hours at royal leisure, by his performance of Handel's music. He was also much patronised by the upper classes, for the sake of his practical skill, and highly esteemed by all for his moral worth, for the simplicity of his manners, and his amiable qualities; but, as he was not selected as an object of cultivation in institutions of genius, the flattering promises of his youth were not fulfilled in future years. After attaining a certain degree of excellence as a mere performer, he remained stationary; and, as regards composition, left not to believe, any on a par with many who had had no education of any sort. He held during many years the appointment of organist to St. George's, Hanover Square. He died unmarried in 1815.

Charles Wesley was born in 1766. 'The seeds of harmony,' says Mr. Barrington, 'did not spring up in him quite so early as in his brother, for he was three years old before he aimed at a tune. His first was "God save great George our King," and such-like, mostly picked up from the floor, as no doubt a base to them till he had learnt his notes.' We may here add, that Mrs. Wesley—a very sensible woman, whose testimony may safely be relied on—toled Mr. Barrington that she had had 'an elder son, who died in his infancy, and who both sung a tune and played the harpsichord was to be sent to Oxford. Samuel from his cradle enjoyed the advantage of hearing his brother's performances on the organ, and his superiority may undoubtedly be partly ascribed to this circumstance. He was not five years old when Handel's compositions were first produced in public. Charles at eight years old, continues the same, 'when Dr. Boyce came to see us. . . . He had by this time scrawled down his oratorio of "Ruth."' The doctor looked over it very carefully, and seemed highly pleased with the performance. His father wrote, 'Thus far I have seen: this boy writes by nature as true a base as I can by rule and study.'

The young musician was now introduced into all companies as a prodigy. He was placed under the instruction of every body, including the most distinguished musicians. Mr. Barrington fills pages in recounting the marvellous things he not only did, but said; for that acuteness which was so striking a feature in him when a man, was not less conspicuous in a child. He being not capable of eight years of age he received some instruction on the harpsichord as well as in composition, and at the same time studied the violin, to which instrument he devoted much time, and completely mastered it. In 1777 he published eight lessons. He was a great walker, with much pleasure, and so much notoriety that his portrait was engraved, and is said, by Mr. Barrington, to have been a strong resemblance.

We have understood that he began to consider music as his profession when he had arrived at his twelfth year, and have in vain endeavoured to trace his history during his progress from adolescence to manhood. Concerning his general education, we must suppose that it was attended to carefully, for he was a good Latin scholar, was not igno-
had successfully cultivated that taste for polite literature which he may be said to have inherited. From personal knowledge we can state that his conversation was that of a man of letters accustomed to the best society. His steady friend, Mr. W. Linley, introduced him to Mr. Sheridan at his villa in Surrey, where he passed two days, the party consisting only of those three. That great wit and musician, Mr. College, full of wonder at his ease and his company, said to his host, ‘I am no judge of Mr. Wesley's musical abilities, but I will venture to assert that his intellectual powers and education would have enabled him to distinguish himself in every walk of life.’

Mr. Wesley's prospects were early clouded by an accident he met with in 1767. In passing along Snow-Hill one evening, he fell into a deep excavation which had been prepared for the foundation of a new building. It is supposed that the severe injury he sustained was the source of that state of mind which subsequently checked the progress of a career that promised to be so brilliant. During seven years he continued in a low desponding state, refusing the solace even of his favourite art. On his recovery however he turned it with renewed vigour, and then brought into notice the works of Sebastian Bach, at that time alike unknown here and on the Continent. In 1815 he suffered a relapse, and was again obliged to retire from public life during another period of the same desolation. Until 1822, and up to 1830 was much engaged in various professional pursuits. The disease then recurred, and it was evident that his constitution was undergoing a great change. He now began to devolve his work. The Saturday immediately preceding the day of his death he exhibited his extemporaneous powers to a friend, and composed some psalm-songs. On the Monday he took to his room, under a presentiment that he should never be in it more. He died two days after, on October the 11th, 1837.

Mr. Wesley produced many compositions, but few of them were calculated to please the multitude. He wrote a grand mass for the chapel of Pope Pius VI., for which the sovereign pontiff himself is said to have been pleased. He also made his amende to the Protestant church by composing and publishing a complete Service for the use of our cathedrals. It must however be granted that, as a musician, his celebrity is greater on the Continent than in his own country, that arises from his performances on the great organ excepted, for which he was better known here than by his printed works. He left a numerous family.

[Barlington's Miscellanies; Gentleman's Magazine, 1837.]

WESSEL, JOHN, Latinized WESSELIUS, a Dutch divine, was born at Groningen in 1419. At an early age he lost his parents, and was educated by a charitable lady, who afterwards sent him to the college of the priests of St. John at Groningen, and, at the age of twenty, he took orders, though this has been said. He continued his studies at Cologne, where he pursued with great zeal the theological works of the Abbot Rupert, the MS. of which was in a convent at Deutz, opposite Cologne; and being an accomplished Greek and Hebrew scholar, he undertook to purify his religious knowledge by reading the original sources of the Christian religion. He was soon suspected of heterodoxy, and for this reason the university of Heidelberg, where Wesley went to teach divinity, would not admit him among the professors, on the ground that he was not a doctor of divinity, and that they could not confer this dignity upon him because he was a layman. Wesley consequently left Heidelberg, and lived some years at Cologne, where he made himself a great name by his private lectures on divinity and philosophy. His philosophical system was that of Aristotle, and his power of argumentation was so great that few doctors ventured to engage in disputes with him. Wesley made himself no less known at Cologne by his sermons in the church, and he attacked abuses with such as much boldness as learning and shrewdness. From Louvain he went to Paris, then the theatre of violent disputes between the Realists, the Formalists, and the Nominalists. He was suspected by his adversaries, but at last he became a Formalist himself. Notwithstanding this change of principles, he maintained his name as one of the greatest dictators of his time, and as much the public voice recognised him by the surname of 'Magister Contradictiorum,' which was probably given to him in Paris. A divine possessing the learning, the talents, and the character of Wesley might have attained the highest dignities in the church, but he was one of the Husites who were defending their religious principles for seventeen years against the thunders of the Vatican and the armies of the Holy Roman empire; and when this war and the degenerate state of the church led to the general election of Pius II. in 1458, and the election of Pius II. to the See of Rome, general of the Minorites, who became afterwards pope under the name of Sextus IV., made the acquaintance of Wesley at an early period, and continued to be his friend and patron. It is said that Wesley accompanied Francis de la Rovere to the Council of Basle, which met in 1431, and was finished in 1443. Wesley must have been very young when he went there, unless he was born in 1398, as some say, though the best authorities agree that he was born in 1419. Francis de la Rovere, having been chosen pope in 1471, told his friend Wesley that he was ready to bestow any favour upon him which he should desire, and asked him if he would accept a bishop's see; but Wesley declined honours and dignities, demanding but a Greek oratory, and was enabled to retire from the library of the Vatican. After a sojourn of several years at Rome, Wesley returned to Groningen, where he died on the 4th of October, 1480.

Wessel is frequently called a forerunner of Luther, and justly so, inasmuch as he tried to eradicate abuses and errors, and to restore the Christian religion to its original purity. It seems that the doctrines of Wicklif had great influence upon him. But there is this remarkable difference between Luther and Wessel: Luther attacked the foundations of the Roman Catholic system; Wessel only wrote against particular doctrines, such as purgatory, the ban, indulgence, &c., and he took his arguments from the philosophical systems of the middle ages quite as often as from the simple truth of the Bible. He was a man suspected of heresy, and after his death some monks at Groningen burnt a valuable part of his manuscripts. Wessel argued, that the pope was not infallible, and that general councils alone were. His principal productions were: a sermon against mea non, 1, De Sacra Eucharistia; 2, De Purgatorio et Judi-mentiis; 4, De Dignitate et Potestate Ecclesiastica; 5, Propositiones de Potestate Papae et Ecclesiae. &c. He wrote also numerous notes and additions to the works of the Abbot Rupert, and used to call his voluminous production 'Mare Magnum.' The editio princeps has the title 'Farrago Romani Theolagorum,' Leipzig, 1522, reprinted at Basel, 1523. Luther, who esteemed Wessel very highly, pronounced his works on election and excommunication; theeditio princeps is not complete. The first complete edition was published at Groningen, 1614, 4to; 2nd edition, Amsterdam, 1617, 4to. Some of Wessel's treaties are contained in the first volume of Goldast, 'Monarchia Sacri Romani Imperii.'

WESSELLING, Peter, one of the first scholars of the eighteenth century, was born on the 7th of January, 1692, at Steinfurt, the capital of the present principality of Ben-themein Steinfurt, in Prussian Westphalia, where he received his first education. In 1712 he went to the university of Leyden, where he studied the classical languages under Pe-rizonius, Gronovius, and Wesseling; and in 1714 he went to the university of Franeker, in West Friesland, where he finished his studies under Vitrivius, Andala, and Bosius. His first intention was to study divinity, but he soon devoted himself to philology. In 1717 he was appointed corrector of the library at Middleburg, with the right to keep for himself six old books. In 1720 he was appointed praelector or professor of history and eloquence in the lyceum of Deventer; and in 1723 he became professor of history and eloquence in the university of Franeker, which office he held during eight years. In 1725 he was appointed professor of Greek, and was conferred his degree of doctor in the same year. In 1732 he became director of the public library at Utrecht in 1750, or perhaps as early as 1749. Hensterofts invited him to teach at Leyden, but Wesseling preferred stopping at Utrecht. Wesseling was rector of the university of Franeker in 1753, and twice, in 1760 and in 1769, he was chosen to the Senate of the University of Franeker in 1753, and twice, in 1760 and in 1769, he was chosen...
rector of the university of Utrecht. He died on the 9th of November, 1764. His reputation as a scholar and a sagacious critic was great. Yet he was little disposed to critical investigations, till his friend and colleague at Franeker, Hemsterhuy, succeeded in persuading him, as Ruhnken states, that no learning, however pure and profound, was of any use unless it were guided by criticism. Wytenbach calls Hemsterhuy, Valckenier, and Wesseling, the triumvir of philology.

The principal works of Wesseling are: 1. An edition of Dionysius the Areopagite. Amsterdam, 1738, fol. 2. This edition contains the prefaces of Henry Stephens and Rhodomann, and the Latin version of Rhodomann, revised by Wesseling, who collected valuable materials, such as the notes of Camust, and of several other scholars: De la Barre at Paris, Nonnus at Brussels, and Prothomianni at Rome, who examined for Wesseling the manuscripts in the libraries of those three cities. The Bipont edition of Diodorus Siculus is little more than a reprint of the edition of Wesseling, though it contains the notes of Heyne and Eyring, who had access to two MSS. at Vienna, which were not used by Wesseling. 3. An edition of Herodotus. Amsterdam, 1769, fol. Wesseling had collated the best MSS. of England, Paris, and Vienna, and several at Rome which were in the possession of Passioni, or to which this learned cardinal had access. The Latin text was compiled by Steijn, the Latin Laureativity, and the notes of Gale, Gronovius, Valckenier, and of the editor: it was considered the best edition of Herodotus, till that of Schwäighäuser appeared in 1816. 4. *Dissertatio Herodotica*, Utrecht, 1758, 4to, treats on several portions of Herodotus and on several other subjects connected with Herodotus. 5. *Veterum Romanorum Itinerarium*, Amsterdam, 1735, 4to, contains the Itinerary of Antoninus, that of Jerusalem, and one of the Itineraries of Hierotheus. It had been published by Bandurius, in his *Imperium Orientale*. This is a useful edition. 6. *Observationum Variorum Libri Duo*, Amsterdam, 1727, 8vo, 2nd edition, by Professor Frotscher, Leipzig, 1832, 8vo, contains various notes on Dion Cassius, Ammianus Marcellinus, Sophocles, Plato, and other Greek and Roman writers. Besides several other valuable works, such as *Libri De Judaeoarchontibus*, *Notae ad Samuellis Petiti Leges Atticae*, &c., Wesseling wrote eight orations in classical Latin, among which are the following: *Oratio de Origine de Pontificiae Dominio*. Wesseling, 1741, fol.; *Oratio in Obitum celsissimae et regiae Principis Annae, Foederat. Belgic. Gubernatrice*. Utrecht, 1793, fol.; and nineteen *Dissertationes*, among which are *Dissertatio Historiocrata* MS. kept in the University of Utrecht; *Dissertatio Medico Theologic* de Origen et Progresso Religionis Christianae in Veteri Persarum Regno; and *Epistola ad H. S. Reimarum*, qua selecta quaedam Dionis Cassii locum partim emendatam, partim ornatam, suppl. Amsterdam, 1739, 4to. A complete copy of the work. Other productions of Wesseling is contained in *Elogium Wesselingi*, in Frotscher's edition of Wesseling's *Observationum Variorum Libri Duo*. Wytenbach, *Vita Davidis Ruhnkeni*, p. 40; David Ruhnken, *Elogium Tertiari Hemsterhui*, 2nd ed., 1780, p. 60, &c. *Strondinm, Das Neue Gekhrte Europa*, pars iv., ix., xx.; Wesseling's Preface to his edition of Herodotus.

WEST, GILBERT, was the son of the Reverend Dr. West, by whom an edition of Pindar was published at Oxford in 1627, and who died in 1718; his mother was Mary, the eldest of the three sisters of Sir Richard Temple, afterwards Lord Cobham; the second of whom, marrying Mr. Richard Grenville, succeeded her brother as Viscountess Cobham, and was afterwards created Countess Temple; and the third of whom marrying Mr. Richard Stratton, was the first lady of Great Grimsby, afterwards the Countess of Long Crendon in Buckinghamshire, of whom was Colonel James West, the friend of John Hampden, and who were descended from Lord Delaware, renowned in the wars of Edward III. and the Black Prince. Benjamin's birth was on 15 October, 1690. He was taught the rudiments of reading in the fields near his mother's residence by Edward Peckover; the subject was the corrupt state of the old world and its imminent destruction. Mrs. West was carried to illness, and Benjamin was born after an illness of twelve days. The peculiar circumstances of his birth, various surmises and prophecies regarding the child's future destiny, and those which promised his future greatness were credulously cherished by his father. The first indication West gave of his talent was in his seventh year,
when set to watch the sleeping infant of his elder sister. He drew a sort of likeness of a child in black and white, a feat which appeared so wonderful in the eyes of his parents, that they recalled to mind the predictions of Peckover. When he was about eight years old, a party of Indians paid a visit to Springfield, and struck with the drawings young West had made of birds, fruits, and the like, they taught him to prepare the red and yellow colours with which they stained their weapons; and these, together with the indigo given him by his mother, with the aid of some hair-pencils supplied from his mother's favourite card-maker, the young pensmith quickly acquired a art which his pen-and-ink sketches had been. A merchant of the name of Pennington and a cousin of the Wests saw some of these attempts, and upon his return home he sent his young cousin a box of colours with pencils, canvas, and six pencils. Young West from this time foresook school and almost shut himself up with his presents in a garret, which he converted into his studio. He made a picture from two of these prints, and Galt, West's biographer, saw this first likeness and exclaimed: 'Ay! Here is the painting of Christ rejected; and he relates that West told him that there were touches in that first essay which he had never surpassed.

In his ninth year West accompanied his friend Mr. Penny and his wife on a journey which he afterwards described as a 'tailor.' He was about to take a ride with a schoolfellow to a neighboring plantation. 'Here is the horse,' said the boy, 'be quick and get upon him, he is yours, and don't frighten him,' said Benjamin. 'I'll ride behind nobody.' 'Oh, very well,' said the other; 'I will ride behind you.' He mounted, and away they rode. This was the first journey he was ever on, and he immediately declared that the next day he would set out to go to Rome and learn to be a painter. 'A tailor,' exclaimed West; 'you will surely never be a tailor.' 'Indeed but I shall,' returned the other; 'it is a good trade. What do you intend to be, Benjamin?' 'A painter.' 'A painter! what sort of trade is a painter? I never heard of it before.' 'A painter,' said West, 'is the companion of kings and emperors. You are surely mad,' said the other; 'there are neither kings nor emperors in America.' 'Ay, but there are plenty in other parts of the world. And do you really intend to be a painter? I believe there is nothing surer.' 'Then you may ride alone,' said West, leaping down; 'I will not ride with one willing to be a tailor.' West's first patron was Mr. Wayne, who gave him a doiion for three poplar-boards upon which he had drawn some figures; and he was at the same time assisted by Dr. Morris, who gave him some money to purchase prepared pannels with. Another patron was Mr. Flower, a justice of Chester, in Pennsylvania, who took young West for a short time to his house, where he made the acquaintance of a young English lady, governess to Mr. Flower's daughters, who told him stories of Greek and Roman history, which the young painter listened to with enthusiasm, and often expanded in conversation. West's first attempt, which attracted much notice was the portrait of Mrs. Ross, of Lancaster, a neighboring town. This led to many other portraits, and a grumihist of the same place requested him to paint a picture of the death of Socrates. West said he could not paint a picture of the death of Socrates, for he was to do with the slave who prevented the poison, who, he thought, should be naked. The grumihist answered his question by going to his shop, and returning with one of his workmen, who was half naked, and offering him as a model. The picture was painted, and attracted much attention.

Upon his return to Springfield, when he was about sixteen years of age, the propriety of his following professionally such a vain and sensual occupation as that of a painter was canvassed both in the Quaker community. But after they had satisfied themselves of the distinction between the use and the abuse of the art, they agreed unanimously that in his case they might suspend the strict operation of their tenets; and his becoming a painter by profession was sanctioned by the whole Quaker community of Springfield. Shortly after this event, West served as a volunteer under Major Sir Peter Halket, and went in search of the remains of the army which had been lost under General Braddock. But from this service he was soon called home by the illness of his mother, and he arrived just in time to see her die. After this event, which he by a great deal of art, left his home, and established himself, then only in his eighteenth year, as a portrait-painter at Philadelphia. He charged two guineas and a half for a head, and five for a half-length. He painted at this time his picture of the Trial of M. D'Angehna. For this, Mr. Pennington made him a portrait from a drawing, which was hung up in his shop, and doubled his prices. Here he had an opportunity of going to Rome, a journey he had long desired to make. Mr. Allen, a Philadelphia merchant, then at New York, was about to send some corn to Leghorn, and he offered West a passage in the vessel. West had saved some money, with which added to a cheque for fifty guineas, that Mr. Kelly, a merchant of New York, gave him in a letter to his agents at Philadelphia when he sat to him for his portrait, besides paying him for the picture, enabled him to undertake the journey. He arrived at Rome in July, 1760, and was well received. When he was introduced, by Lord Grantham, to the old Cardinal Albani, who was blind, as a young American who had come to Rome to study the arts, the Cardinal asked him whether he was learning this art for what purpose. He answered that West was learning it as an American, because he thought that an American, as an American, could have seen nothing of art, were anxious to see what effect the noble works of antiquity would have upon him; and, says Galt, 'thirty of the most magnificent epigraphs in the capital of Christendom, a visit to the Louvre, a tour through Europe, conducted the young Quaker to view the masterpieces of art.' It was agreed that the Apollo should be first submitted to his view. The statue was enclosed in a case; and when the keeper threw open the doors, West exclaimed: 'Mr. Galt, is not this the warrior!' The Italians were surprised and mortified with the comparison of their noblest statue to a wild savage; and West perceiving the unfavourable impression, promptly removed it to another room. He described the Archivolt, the natural elegance and admirable finish of the work, the elasticity of their limbs, and their motions free and unconstrained. 'I have seen them often,' he continued, 'standing in the very attitude of this Apollo, and pursuing with an intense eye the arrow which they had just discharged from the bow.' This criticism was afterwards repeated as one of the best that was ever pronounced upon the Apollo.

West however soon attracted other attention than that of mere curiosity. He painted a portrait of Lord Grantham, which was placed in the gallery of Crespigny, where artists and amateurs used to meet. The picture was almost universally supposed to be by Mengs, and all were greatly surprised when they heard that it was painted by a young American. The most prominent among them was West that he had no occasion to come to Rome to learn to paint; and he advised him immediately to visit the principal cities of Italy, and examine the various great works in them, and then to return to Rome and paint some historical picture. An illness prevented West from putting this plan into execution; he was confined through a fever eleven months at Leghorn. When he recovered, instead of being without means, he found to his great astonishment that his agent had orders to give him unlimited credit. He owed this to the generosity of two Philadelphia merchants, Mr. Allen and Governor Hamilton. He now pursued the plan recommended by Mengs; and after he had examined all that was worth studying in Florence, Bologna, and Parma, he returned to Rome, and painted two pictures, which were well received; one of Cicero and Iphigenia, and one of Angelica and Medora. He was elected a member by the academies of Florence, Bologna, and Parma. Of the works of Raphael and the masters of Rome he has expressed the following opinion: 'Michael Angelo has not succeeded in giving a probable character to any of his works, the Moses perhaps excepted. The works of Raphael grow daily more interesting, natural, and noble.'

In 1763 West visited England on his way back to his own country; and in London he had the good fortune to meet three of his best friends, Messrs. Allen, Hamilton, and Dr. Smith, who had always taken great interest in him. He soon made connections by the help of his friends,
and the two pictures mentioned above, and a portrait of General Monkton, second in command to Wolfe at Quebec, all of which he exhibited in town, procured him a few commissions. He painted the portraits of Prince and Andromache for Dr. Newton, and the Return of the Prodigal Son for the bishop of Worcester. Lord Rockingham offered him 700l. per annum to decorate his mansion in Yorkshire; but this offer, by the advice of his friends, he declined. He next went to Ireland, where he had the honor to introduce Drumsmond, a young American lady, he requested her to come over to him, England, which she did, and they were married a short time afterwards.

West's good fortune seemed to keep pace with his years. Dr. Drummond, the archbishop of York, commissioned him to paint a picture of Agrippina landing with the Ashes of Germania; and the prelate was so well pleased with the performance, that he attempted to procure the painter an annuity by subscription, so as to enable him to desist from painting portraits and to confine himself to historical subjects. He proposed to raise 3000l., and he and his friends subscribing 1500l., he however failed in the enterprise, but he raised both the painter and the picture to high rank. He had nearly forty years' intimacy with George III. West's excellence as a painter however was not the only source of his good fortune; he was an excellent skater, and acquired numerous friends through his accomplishments. When the Serpentine river in Hyde Park was frozen over, a great circle of spectators was frequently seen to admire the young American painter cutting the Philadelphia salute.

The picture of Regulus was exhibited in the first exhibition of the Royal Academy, of which West was one of the principal members; he had previously been a member and director of the Society of Artists, incorporated in 1765. But his death of General Wolfe was the first work which established his high reputation as a painter. His portraits in Greek and Roman costumes, as was usual, he very sensibly painted them in their own dresses; an innovation which Sir Joshua Reynolds had tried to dissipate him from. The following is, according to Galt, West's account of this subject. He says, 'When I was understood that I intended to paint the characters as they had actually appeared on the scene, the archbishop of York called on Reynolds, and asked his opinion; they both came to kneel down before me from running so great a risk. Reynolds began a very ingenious and brilliant dissertation on the state of the public taste in this country, and the danger which every innovation incurred of contempt and ridicule, and concluded by urging me earnestly to adopt the costume in the greatest part of my subject than the modern garb of European warriors. I answered, that the event to be commemorated happened in the year 1758, in a region of the world unknown to Greeks and Romans, and at a period of time when no warriors who wore such costume existed. The subject I have to represent is a great battle fought and won, and the same truth which gives law to the historian should rule the painter. If, instead of the facts of the action, I introduce historic dress, how shall I be understood by posterity? The classic dress is high and grand, and is not lost in sentiment what I gain in external grace. I want to mark the place, the time, and the people; and to do this I must abide by truth.' They went away then, and returned again when I had the painting finished. Reynolds seated himself before the picture, examined it, and 'said minutely, and for half an hour; then rising, said to Dmmond, "West has conquered—he has treated his subject as it ought to be treated—I retract my objections. I foresaw that your picture will not only come on to the most popular, but will occasion a revolution in art."' West was now thoroughly established both in the king's favor and in that of the public, and he continued to produce in rapid succession a series of large and in many respects excellent portraits, and it was thought that the great reputation he acquired was relatively well merited, though his works will not bear comparison with those of the great masters of Italy. Lord Grosvenor purchased the picture of the Death of Wolfe, and West made a copy of it for the king. He painted also for the king, the Death of Epaminondas as a companion to it; the Death of the Chevalier d'Eon; and the Family of the King of Armonia; and Segestus and his Daughter brought before Germanicus. He painted the following series of large historical works for George III. at Windsor:—Edward III, embracing the Black Prince, after the battle of Cressy; Francis I, in the battle of Guat; the Black Prince receiving the King of France and his Son prisoners at Pojects; St. George killing the Dragon; Queen Philippa defeating David of Scotland in the battle of Philip's Oak; the Duke of Orleans, Edward for the Burgess of Calais; Edward forcing the passage of the Somme; and Edward crowning St. Eustace de Ribamboul at Calais.

After the completion of these works, West proposed to the king to paint a picture on the subject of the Progress of Revealed Religion; but his majesty, before consenting to this proposal, consulted some of the dignitaries of the church as to the propriety of introducing paintings into a place of worship: Bishop Hurd answered for himself and colleagues, and said that the objection of religion. To myself that your majesty's chapel could in no respect violate the laws or usages of the church of England. Out of thirty-five subjects proposed by West, all were approved of by the bishops: he afterwards added another to the number. He divided the theme into the four parts of antiquity, the archal, the Mosaic, and the Prophetic. Half of the subjects were from the Old Testament and half from the New. They were all sketched, and twenty-eight of them were executed, for which West received 3000l. He painted in the other eight the portrait of the royal family, for which he received 2000 guineas.

After the death of Reynolds, in 1792, West was unanimously elected president of the Royal Academy, and the king sent the Duke of Gloucester to inform him that the honour of knighthood would be acceptable to him. 'No man,' said West, 'entertains a higher respect for political honours and distinctions than myself, but I really think I have earned greater eminence by my pencil already than I have rendered myself, and titles is to preserve in families a respect for those principles by which such distinctions were originally obtained—but simple knighthood to a man who is at least as well known as he could ever hope to be from that honour, is not a legitimate object of ambition. To myself that your majesty's highness must perceive the title could add no dignity, and as it would perish with myself, it could add none to my family. But were I possessed of fortune, independent of my profession, sufficient to enable my posterity to maintain the rank which I have acquired, the title might become a desirable object. As it is however, that cannot be, and I have been thus explicit with your royal highness, that no misconception may exist on the subject.' The duke is believed to have distinctly understood this, and said, 'You have justified the opinion which the king has of you; he will be delighted with your answer.'

In 1801, during the illness of George III., West met with perhaps the first serious illness of his life: Mr. Wyatt, the royal architect, called upon him, and told him that the pictures painting for the chapel at Windsor must be suspended until further orders. 'This extraordinary proceeding,' says his biographer, 'rendered the studies of the night part of his day, and using it I so lost in sentiment what I gain in external grace. I want to mark the place, the time, and the people; and to do this I must abide by truth.' They went away then, and returned again when I had the painting finished. Reynolds seated himself before the picture, examined it, and said, 'West has conquered—he has treated his subject as it ought to be treated—I retract my objections. I foresaw that your picture will not only come on to the most popular, but will occasion a revolution in art.'
to receive it, he was told it had been stopped, and that the paintings for the chapel, of Revealed Religion, had been suspended. He submitted in silence—he neither remonstrated nor complained.' During the thirty-three years which West worked for George III best; there is a 24,140

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the distributions of prizes. As literary compositions these discourses are nothing remarkable, and they are chiefly distinguished for their simplicity and common sense. The British Institution arose out of a favourite plan of West's, and the strength and novelty of his recommendation of the encouragement of works of high art. There is a full-length portrait of West, by Sir Thomas Lawrence, in the National Gallery.

(Galt, Life and Studies of Benjamin West, &c.; Com- munication, Lives of British Painters, &c.; Annual Bio-

graphy and Obituary, vols. i. and v.)

WEST BROMWICH. [STAFFORDSHIRE.]

WEST INDIES is a term at present exclusively applied to the archipelago which constitutes the eastern boundary of the Gulf of Mexico; the Guianas, and the islands of the Lesser Antilles. They are divided into three groups: the Portuguese, the Spanish, and the French. The Guianas, the largest, extends from 19° to 10° N. lat., and from 50° to 60° W. long.

The most northern portion of this archipelago, or that part which is north of 20° N. lat., rests on an extensive plateau which is in some places as much as 800 feet in elevation. It exhibits a great variety of rocks and minerals, and is covered with extensive forests. The most remarkable of these rocks is that which is known as the Old Bahama Island, and divides the bank into two nearly equal parts. To the north and north-east of it is the Great Bahama Bank, and the Bahamas Islands; and on the south of it the West End Bank, and the West Bank.

The Old Bahama Channel is connected at its north-western extremity with the Florida Straits by two arms, enclosing the Florida Bank, of which the northern is called the Sotaren Channel and the southern Nicholas Channel. The Florida Straits themselves ought to be considered as the northern continuation of the Old Bahama Channel, as they divide the Bahamas Bank from the continent of North America.

In the language of sailors the Old Bahama Channel is considered as terminating in the east between the small Island of Cuba, and the island of Henegaus (the Inagua of our maps); but in a more comprehensive view, we must include in it the deep sea which separates the minor banks north of Hayti from this island, so that it extends to the Moni Bank, in one line with the island of Cuba, which is the northernmost of the Greater Antilles.

The most narrow portion of the Old Bahama Channel is between 22° and 23° N. lat., where its width hardly ever exceeds twelve miles.

The Bahamas Bank consists of the Great and Little Bahamas, and six smaller banks, which lie to the south-east of Great Bahamas Bank. Little Bahamas Bank, the most northerly of all, extends about 100 miles from north-west to south-east, and is between 30 and 40 miles wide. Along its eastern edge is the Island of Alacran, on the southern that of Grand Bahama. Between this bank and Great Bahamas Bank is Providence Channel, which unites Florida Straits with the Atlantic, and is from 20 to 40 miles wide. Great Bahamas Bank extends about 300 miles north-west to south-east, and is about 100 miles wide, so as to cover an area of about 45,000 square miles. But a considerable portion of this surface is occupied by two remarkable inlets of deep water, which extend parallel to one another in the longitudinal direction of the bank. The east inlet opens into Providence Channel, and is called the Tongue of the Ocean. Near its entrance are the islands of New Providence and of Andros. The second inlet is the deep water.

The Inlet of the islands of St. Salvador, which is the first place where Europeans landed in America. This inlet is called Exuma Sound, from the island of that name, which is situated towards the southern end of the island, and are best seen in May and June, being then surrounded by innumerable islands, which lie along it in a row, and extend over more than 80 miles. The outer edge of the bank,
that which is turned towards the Atlantic, is in nearly its whole extent raised above the surface of the water; and here are three large islands, Eleuthera, St. Salvador, and Long Island, of which the first is more than 80, the second about 60, and the last about 70 miles long. There are no islands along the inner edge of the bank, or that is washed by the Florida Straits, Santanent Channel, and Old Bahama Channel, with the exception of a few rocks, which are hardly above the surface of the sea.

The minor banks are situated south-east of Great Bahama Bank, and in number, of which however only three contain islands. The first is the Bank of Crooked Island, which is separated from the Great Bahama Bank by Crooked Island Passage, through which the vessels generally pass when going from the West Indies to Europe. This bank extends hardly more than 50 miles from south-west to north-east. It has the form of a triangle, and its edges are formed by islands, except towards the south-west. The largest islands are Crooked Island and Akin's Island. Between Crooked Island and the Caicos Bank, is a wide opening of the sea, which lies due north to the Windward Passage, or the wide strait between Point May in Cuba and Mole St. Nicholas in Hayti. In this wide opening are the islands of Grand and Salt Cay (Jamaica) and St. George (Barbuda), with a few smaller ones, which differ from the other Bahama islands in rising much higher above the surface of the sea, and not being contiguous to banks, though surrounded by reefs and cliffs. The Caicos Bank extends probably more than 60 miles from north-west to about 50 miles across; and its islands, the Caicos, lie along the north-eastern and north-western edge of the bank. Between this bank and the following, called Turk's Islands Bank, extends a strait, known as Turk's Island Passage, which is narrower than the bank itself, and contains two small but tolerably fertile islands, Grand Cay and Salt Cay. The three remaining banks, Mouchoir Carré Bank, Silver Bank, and Bajo de Navidad, contain a few naked rocks.

The extensive banks which surround the greater part of the island of Cuba prove that this island rests on a bank similar to the Great Bahama Bank. These banks surround the island to a distance of about 400 miles, and are surrounded by a bank of generally small extent, where large vessels have access. (Cuba, vol. viii., p. 394.) They generally extend from 20 to 50 miles from the shores, and in a few places even to 80 or 100 miles. The eastern portion of Cuba however is not from banks, and in these districts alone the mountains rise to a considerable elevation, whilst those parts which are surrounded by banks contain only hills. The division between these two regions may be marked by a line drawn from the southern shores to Punta Matarorro on the northern coast.

The mountainous portion of Cuba evidently belongs to another region, which extends far to the east, comprising the three other larger Antilles and the Virgin Islands; and extending almost to the coast of Hayti, but not in the western parts the mountains rise to a great elevation. The Montanes del Cobre in Cuba, to 7200 feet; the Blue Mountains in Jamaica, to 7500; and those of Cibaio in the southern, to about 8000 feet. Failing to the east the mountains in Puerto Rico they do not attain 4000 feet, and in the mountainous districts of the north 2000 feet. Those of Virgin Gorda perhaps do not exceed 600 feet. These mountains exhibit the formation of most mountains of Europe, and those of rocks are prevalent in the highest range. Between them there are valleys of considerable width, and on their sides smaller ones, all of which are very fertile. There are considerable plains, as in Jamaica and Hispaniola, which however are destitute of trees and less fertile. The mountains, their declivities, and the valleys are thickly wooded in their natural state.

The strait which lies between Virgin Gorda and Anguilla separates this region from the islands of volcanic origin, which extend from 18° 20' to 12° N. lat. and between 60° and 64° W. long. This strait is the curved line. These islands consist, either entirely or for the most part, of mountains and rocks of volcanic origin. Anguilla, which lies at the most northern extremity, and Barbuda and Barbados, which do not lie in the line of the row, but are somewhat to the north, are however not much elevated, and they exhibit no traces of volcanic action, but consist mostly of limestone rocks. The greater number of the others are entirely composed of lava or other rocks of volcanic origin; but in St. Martin, St. Barbuda, and St. Eustache, there are extensive cliffs consisting of limestone or sandstone. Two of these islands have active volcanoes: that of Guadaloupe made its last eruption in 1797; and that of St. Vincent in 1812. The others contain extinct craters or solfatara in different degrees of elevation. The Antilles, however, are not the only countries consisting of volcanic rocks, presents great and sudden irregularities. The mountains rise from 2500 to more than 8000 feet above the sea. The highest are the Morne Diabloin in Dominica (3516 feet) and the Soufrière mountain on Martinique (4000 feet), both being about 18° N. lat. The mountains are the centre of the chain. Proceeding south and north they become lower, but Mount Misery in St. Christopher is still 4854 feet, and Morne Rouge in Grenada 3840 feet high.

The northern shores of these islands, which are exposed to the winds from the north and south, are generally too short and too much exposed to the trade-wind to constitute harbours. On the western shores the Indancs are generally deep, and their declivities gradual; and here the inlets are of greater extent, and form good harbours.

The fourth natural division of the Columbian Archipelago comprehends the islands of Tobago and Trinidad, which are situated on the eastern slopes of the islands of Puerto Rico and Hispaniola, in the general line of the north-east coast of Venezuela. There are no traces of volcanic action on them, except some mud-volcanoes on Trinidad. This island consists of three ranges of mountains, including two wide plains. In Tobago there are 20 feet above the sea-level, and have gentle declivities.

Climate.—All the islands of the Colombian Archipelago, with the exception of the most northern Bahamas, are within the tropic; and their climate, as in other countries, is generally warm and equable. The trade-winds, which depend on that progress. The year is divided into two seasons, the dry and wet. All the islands which are south of 18° N. lat. have two dry and two wet seasons, and this is also the case with the southern shores of the islands of Puerto Rico and Hispaniola. The long dry season sets in when the sun approaches the southern tropic, about the end of November or the beginning of December. In this season the weather is generally very constant, and the rain indeed occurs, but not frequently; and this dry climate is continued from six weeks to seven weeks and even months in succession. This weather lasts till the sun approaches the equator. Towards the end of March a change in the atmosphere takes place in the most southern islands, and it becomes cooler in the north. The sun is then near 18° N. lat. The short rainy season begins, which in the southern islands lasts about six weeks, but in the northern only 15 or 20 days. Showers are then frequent, and sometimes several occur in one day, but they hardly exceed six months in the northern islands. But this season also begins about the 24th of May, and lasts till the sun reaches the northern tropic. In July the long rainy season sets in, and continues to the month of November. These rains, which are ushered in by violent gusts of wind, and accompanied by terrific thunder-storms, are generally not heavy in July; but they become so in August in the southern, and in September in the northern islands. They then descend in torrents, and sometimes continue for twenty-four hours without interruption; but they usually fall in

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showers, several of which occur in one day, and sometimes as many as twenty. In the southern islands they begin to diminish in September, and in the northern in October. In November the showers are moderate and less frequent.

On the island of Cuba and on the northern coasts of the other Greater Antilles and the Bahamas, the seasons are not so distinctly marked. Though fine weather prevails during the long dry season, it is frequently interrupted by rain. It must however be observed that the heaviest falls fall in those months when the rainy season is the longest, in the islands lying farther south. The quantity of rain which annually falls in these countries is considerably less than in those islands where the seasons are more regular. In the former it amounts to between 48 and 80 inches, and in the latter to 60 to 80 inches.

The mean annual temperature differs very little in places situated between the tropics. In the West Indies it is about 79°, as may be inferred from the observations recorded in the following table, in which those made at Puerto d'Espana in Trinidad, the most southern island, are placed by the side of the observations made at the Havana, in Cuba, and at Nassau, in Old Providence (25° N. lat.), one of the Bahamas.

**Mean of the Monthly Temperature observed.**

<table>
<thead>
<tr>
<th>Month</th>
<th>At Puerto d'Espana</th>
<th>At the Havana</th>
<th>At Nassau</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>70°5</td>
<td>70°</td>
<td>69°</td>
</tr>
<tr>
<td>February</td>
<td>76°5</td>
<td>72°</td>
<td>73°</td>
</tr>
<tr>
<td>March</td>
<td>77°5</td>
<td>75°</td>
<td>76°</td>
</tr>
<tr>
<td>April</td>
<td>79°5</td>
<td>79°</td>
<td>78°</td>
</tr>
<tr>
<td>May</td>
<td>79°5</td>
<td>72°-79°</td>
<td>79°</td>
</tr>
<tr>
<td>June</td>
<td>78°</td>
<td>83°-81°</td>
<td>83°</td>
</tr>
<tr>
<td>July</td>
<td>78°</td>
<td>83°-80°</td>
<td>87°</td>
</tr>
<tr>
<td>August</td>
<td>73°5</td>
<td>83°-88°</td>
<td>88°</td>
</tr>
<tr>
<td>September</td>
<td>78°</td>
<td>83°</td>
<td>87°</td>
</tr>
<tr>
<td>October</td>
<td>76°</td>
<td>75°-76°</td>
<td>80°</td>
</tr>
<tr>
<td>November</td>
<td>74°</td>
<td>74°</td>
<td>78°</td>
</tr>
<tr>
<td>December</td>
<td>75°</td>
<td>70°</td>
<td>70°</td>
</tr>
</tbody>
</table>

Mean annual temperature: 78°-79°-87°

But though the mean annual temperature is nearly the same all over the Archipelago, the difference between the hottest and coldest month at Puerto d'Espana is only 3 degrees; whilst at the Havana it is nearly 14 degrees, and at Nassau 10 degrees. There is of course a considerable difference in the mean temperature of the seasons, as appears from the following table:

<table>
<thead>
<tr>
<th>Season</th>
<th>At Puerto d'Espana</th>
<th>At the Havana</th>
<th>At Nassau</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter, Dec. to Feb.</td>
<td>76°-75°</td>
<td>70°</td>
<td>69°</td>
</tr>
<tr>
<td>Spring, March to May</td>
<td>77°-79°</td>
<td>79°</td>
<td>77°</td>
</tr>
<tr>
<td>Summer, June to Aug.</td>
<td>78°-79°</td>
<td>83°-84°</td>
<td>86°</td>
</tr>
<tr>
<td>Autumn, Sept. to Nov.</td>
<td>78°-79°</td>
<td>78°-80°</td>
<td>81°</td>
</tr>
</tbody>
</table>

The greatest heat experienced at Puerto d'Espana does not exceed 85°, or 15 degrees above the mean annual temperature. At the Havana the thermometer sometimes rises, but rarely, to 92°; but it sometimes descends as low as 45°, and in its vicinity ice is occasionally formed, after a long continuance of northern winds in December or January. (Cmna, vol. viii., p. 204.) With this exception, it is stated that no pro. have been experienced even on the summits of the high mountains of Cuba or Jamaica.

When the sun is in the southern hemisphere, the archipelago enjoys the full benefit of the trade-winds, blowing from north-east and east-north-east, and diffusing over it a refreshing coolness. But whenever the sun has passed the equator, the trade-winds retire to the northward as far as 15° or 16° N. lat., and are replaced by south-eastern winds, which are warm and usually gentle; they continue to blow with diminishing force till June, when they are frequently interrupted by calms which blow from all the points of the compass, and frequently in very violent gusts. This is also the season of the hurricanes, which rarely occur in July, but generally in August or September. They are now all extinct on Trinidad and Tobago, and are hence more frequent and destructive on the Lesser Antilles than in Jamaica or Cuba. In Cuba they usually occur in October. When the trade-winds are not strong, the heat is moderated by the daily alternation of the sea- and land-breezes, the first blowing by day, and the land-breeze by night. The calms between the breezes are the hottest part of the day, but they last only from one to two hours.

All the islands of the Columbian Archipelago are subject to earthquakes; but they are not violent, except on the islands of volcanic formation, where they prove sometimes very destructive, which has been the case this year in Guadalupe. The climate is considered healthy from November to June, but during the great rains various diseases, especially fevers, are prevalent.

The seas and Currents, a knowledge of the navigation of the archipelago is much affected by the currents which prevail in the surrounding seas. The Guiana or Guyana Current (Atlantic Ocean, vol. iii., p. 297), which runs from Cape St. Roque, in Brazil, along the shores of Guyana, and sets to the north-west, enters the Caribbean Sea, and runs between the islands of Trinidad and Martinique. It is strongest between Trinidad and Granada, where it runs from a mile to a mile and a half per hour, and has less strength between the last-mentioned island and St. Lucia, where it runs less than a mile per hour. Between St. Lucia and Martinique the current is reduced to 21 miles per day. North of Martinique a weak current is met with, running only from eight to ten miles per day, and hence it is considered as being only the continuation of the drift current of the Northern Atlantic. It renders the communication between the islands very tedious, especially in the season when the trade-winds are not in force, and calms prevail.

A current running in a different direction prevails along the north-eastern coast of the Bahamas. It sets along the banks to the east-south-east, and varies much in strength according to the seasons. Rennell thinks it probable that this current is only the continuation of the northern counter-current of the Gulf Stream.

In the sea between this current and the Guyana Current the extraordinary phenomenon occurs which is called the 'Ground-sea,' or, in Jamaica, the 'North Sea.' It is a swell of the sea, to which the south-eastern Bahamas, the northern-eastern coast of Cuba, and Hispaniola, but not Puerto Rico and the Virgin Islands, are subject. This heavy swell sets in generally in October, and continues, though with some interruption, till April and May. During June, July, and August it appears only occasionally, and for a short time. It takes place when the air is calm, when there has been no indication whatever of a previous gale, or even when light airs have for a considerable period come from the southward of east. The sea approaches from the north the banks of the island of Hispaniola as far as the Barbados, and the waves approach the land in masses, which suddenly rise to large ridges crested with foam, and form billows which burst upon the beach with great impetuosity. When the waves dash against cliffs, the spray often flies more than 100 feet high, and is attended with loud and tremendous resounding noises, which are carried along a rumbling noise caused by the nodules and fragments of rock which the breaker brings to the shore. Wave then follows wave in quick succession, there being only a short interval after the third. The sea for many miles from shore assumes a peculiar aspect. Different tints of blue, from the lightest to the darkest, form a strong contrast with the snowy foam of the breaking waves when they strike against the broken rock, or with the white line which is visible along the whole coast. The phenomenon of the 'ground-sea' has not been explained satisfactorily, and seems not to occur in other parts of the globe, except along the south-western coast of Sumatra, where the surf, as described by Maresen in his 'History of Sumatra,' exactly resembles the ground-sea of the Columbian Archipelago.

**Productions.—** The grains, plants, vegetables, and fruit-trees, which are cultivated either for the purpose of obtaining articles of export or as food, have been described under the several productions of the islands and are too numerous to be separately noticed.

The wild animals which existed on the archipelago when the Europeans first arrived were, the agouti, peccary, sis-<ref>co</ref>on, also or native Indian dog, and the wild hog. There are now all extinct on Trinidad and Tobago, except the wild hog, which is still common on most islands. Monkeys are still found on several islands, and in Jamaica there is a smaller kind. Birds are numerous, and nearly all of them are fit for food. There are numerous parrots, wild guinea-fowls, quails, several species of wild pigeons and...
The Swedes possess only the small island of—
St. Bartholomew.
The Island of Hispaniola, including the adjacent islands of Barba, Tortes, and Grenada, is estimated to contain—

25,000.

Population and Inhabitants.—The population amounts to 3,200,000 individuals. But it is very unequally distributed over the islands. The Bahamas, which exceed in surface the Lesser Antilles by 483 square miles, had in 1839 only 23,048 inhabitants, whilst the population of the last mentioned group exceeded 600,000. This is chiefly to be ascribed to the inferiority of the soil of the Bahamas, and to its general unfitness to produce the same, but partly also to their being settled only at a comparatively late period. [Bahas, vol. iii., p. 275.] The last-mentioned circumstance must be taken into account in forming an opinion on this subject is evident from the rapid increase of the population of the Bahamas of late years. In 1857 they had 19,948 inhabitants; and in 1890, 29,048: so that in two years the increase amounted to 3,015, or nearly to 16 per cent. In the British Antilles, on the contrary, the population has decreased since the abolition of the slave-trade, and in some of them considerably. It is however supposed that the emancipation of the slaves will increase the population in the British Antilles, though it will probably diminish the commercial produce of the islands; such has been the effect on the island of Hispaniola, whose population has certainly increased in this century, and the value of its commercial produce has been greatly diminished. The Spanish islands, which, up to the emancipation of the Spanish Main, had been neglected by the government and nation, but which, since 1815, have attracted the attention of both, have in about twenty-five years nearly doubled their population. The islands belonging to the other European nations have either remained stationary, or their population has increased, though not much.

Population of the West Indies in 1850, founded on different censuses, taken between 1830 and 1840—

<table>
<thead>
<tr>
<th>Islands</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuba</td>
<td>900,000</td>
</tr>
<tr>
<td>Puerto Rico, with dependencies</td>
<td>380,000</td>
</tr>
<tr>
<td>British islands</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Bahamas</td>
<td>23,048</td>
</tr>
<tr>
<td>Jamaica</td>
<td>311,070</td>
</tr>
<tr>
<td>Virgin Islands</td>
<td>20,000</td>
</tr>
<tr>
<td>Anguilla (supposed)</td>
<td>4,285</td>
</tr>
<tr>
<td>Barbuda (supposed)</td>
<td>2,000</td>
</tr>
<tr>
<td>St. Christopher</td>
<td>22,362</td>
</tr>
<tr>
<td>Nevis</td>
<td>7,434</td>
</tr>
<tr>
<td>Montserrat</td>
<td>7,119</td>
</tr>
<tr>
<td>Antigua</td>
<td>37,631</td>
</tr>
<tr>
<td>Dominica</td>
<td>18,650</td>
</tr>
<tr>
<td>Santa Lucia</td>
<td>14,179</td>
</tr>
<tr>
<td>Barbados</td>
<td>10,207</td>
</tr>
<tr>
<td>St. Vincent</td>
<td>27,122</td>
</tr>
<tr>
<td>Granada and Grenadines</td>
<td>20,194</td>
</tr>
<tr>
<td>Tobago</td>
<td>11,748</td>
</tr>
<tr>
<td>Trinidad</td>
<td>39,328</td>
</tr>
</tbody>
</table>

French islands—

<table>
<thead>
<tr>
<th>Islands</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guadeloupe, with dependencies</td>
<td>127,574</td>
</tr>
<tr>
<td>Martinique</td>
<td>116,631</td>
</tr>
</tbody>
</table>

1,011.

Danish Virgin Islands—

<table>
<thead>
<tr>
<th>Islands</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. John</td>
<td>2400</td>
</tr>
<tr>
<td>St. Thomas</td>
<td>7000</td>
</tr>
<tr>
<td>Santa Cruz</td>
<td>32,000</td>
</tr>
</tbody>
</table>

41,400.

Dutch islands—

<table>
<thead>
<tr>
<th>Islands</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Martin (supposed)</td>
<td>4000</td>
</tr>
<tr>
<td>Saba (supposed)</td>
<td>450</td>
</tr>
<tr>
<td>St. Eustatius</td>
<td>2900</td>
</tr>
</tbody>
</table>

6950.

The Swedish island of—

St. Bartholomew—

<table>
<thead>
<tr>
<th>Islands</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1890</td>
</tr>
</tbody>
</table>

715.

The original inhabitants of these islands are extinct, with the exception of a few families of Caribs, on the islands of St. Vincent and Trinidad. The present population is com-
posed of whites and negroes, and the opening of these two races. In the tables published by government since the census of the slaves the number of inhabitants belonging to each race is separately stated, and it is therefore impossible to determine the present proportion between them. But from the census published formerly, and other facts, it is evident that in the British islands the negroes form one-fourth of the population; in Cuba, about one-half; and in Puerto Rico, three-fourths.

The proportion between the two races in the islands which belong to other European nations is nearly the same as in the British islands. In Hispaniola both races are so mixed, that the following words are often written: 'Jamaican negro.'

History.—The greater number of the islands composing the Columbian Archipelago were discovered by Columbus. On his first voyage he first fell in (12th Oct., 1492) with the island of St. Salvador, one of the Bahamas, which the natives called Guanahani. He visited also the Bahamas, and then sailed along the east coast of the last-mentioned island from Punta Maternola to Cape Mayney, where he passed to Hispaniola, of which he discovered a great part of the northern coast. His second voyage (1493) he discovered the Lesser Antilles north of 15° N. lat., and also Puerto Rico, and in the following year the southern coast of Cuba. In his third voyage (1496) he discovered Trinidad, the last part forming the western boundary of Margarita and Cuba. In his fourth voyage he discovered the Bay of Honduras and the whole of the coast of Central America from Cape Gracias a Dios to Puerto Bello, and in returning from this coast to Hispaniola, also the islands of the Grenadines. St. Vincent was then discovered, either at the same time or soon afterwards. Columbus formed the first settlement on his second voyage, and in the beginning of the sixteenth century the other Greater Antilles were occupied and settled by the Spaniards, who afterwards undertook important settlements in the commercial intercourse with these islands. But as the Spaniards did not think it worth their while to occupy the smaller islands, they became the resot of that extraordinary society of pirates known by the name of Buccaneers, which flourished in the sixteenth and still more in the following century. Thus these islands became better known in Europe, and with the assistance of the Buccaneers several nations settled permanently in them. Other islands were wrested from the Spaniards, and with his reputation, in the second half of the sixteenth century.

Several events which have taken place during this century have considerably affected the condition of the English possessions; the abolition of the slave-trade, the emancipation of the slaves, and the free intercourse not only of England, but also of other European nations, with countries producing similar articles. The possessions of other nations, except the Spaniards, have also partly been affected by some of these events.

(Bryan Edwards, History of the West Indies; Humboldt's Voyage aux Regions Equinoxiales du Nouveau Continent; Waller's Voyage to the West Indies: West India Sketch-Book; Schomberg's Old and New England; a Work Illustrated by Twenty-five Engravings, Middon, A Toolemonde's Residence in the West Indies; and Tables of the Revenue, Population, and Commerce of the United Kingdom, 1842.)

WESTALL, RICHARD, R.A., one of the more distinguished of the English painters of the late generation, was born in 1766, probably in London. In 1779 he was apprenticed to Mr. Thompson, an engraver, in the city, of heraldry on silver, but his superior abilities having been perceived by Mr. Alfoldour, a miniature painter, he was recommended by that gentleman to study drawing, and make painting his profession. He accordingly obtained leave from his master in the last year of his apprenticeship to draw in the evenings at the Royal Academy, and in 1786 he was at liberty to follow the bent of his own inclina- 

tion. He took, jointly with his friend Sir Thomas [then Mr.] Lawrence, a house in Soho Square, in the corner of Great Street, which covered the whole of a small room.

Westall's first performances which attracted the notice of the public were some highly finished historical pieces in water-colours, in which he was without a rival: of these he afterwards said—'Sappho in the Lesbian Shades, chanting the Hymn of Love; Julai, the first voice of the Lyre; the Boat that killed Adonia brought to Venus; the Storm in Harvest; the Marriage Procession (from the Shield of Achilles); besides many others.' He made also a series of very considerable designs to illustrate Milton, for Alderman Boydell; and he was a contributor to the 'Boydell Shakesperians.' He painted at the same time several large historical pictures, but he met with so little success in the disposal of them, that he was almost compelled to confine himself to making small designs for booksellers, and in the number and popularity of his designs of this class he was second only to Stothard. They added however little to his reputation, for, owing probably to the great number required of him, he fell into a peculiar and affected mannerism which detracted from all his performances. Some of his later works were much admired; one of these was 'Crabbé's Poems,' and Moore's 'Loves of the Angels.'

Westall was elected a member of the Royal Academy in 1794, the same year in which Sir Thomas Lawrence was admitted. Towards the end of the year he became very embarrassed in his means, owing to some unsuccessful speculations in foreign pictures and some imprudent partnership engagements. His last occupation was giving lessons in drawing and painting to her present majesty while Princess Victoria. He died on the 4th of December, 1836.

Although Westall's circumstances were, during the last few years of his life, not very prosperous, they were not so bad as was represented in several newspaper accounts that appeared at the time of his death; nor was there any allowance granted by the Royal Academy to his superannuated or distressed members. His sister, Miss Westall, depended entirely upon him for support, and he allowed her regularly 60£ a year until his death. After her brother's death the Duches of Kent settled an annual pension upon her of 100£.

In 1808 Westall published a book of poems illustrated by himself. As a historical painter he will never hold a place in the rank; some of his works display a fine feeling for light and shade, and a certain elegance of colouring; but his later works were extremely mannered, formal in composition, and stiff and affected in design.

(Gentleman's Magazine.)

WESTBURY, [Wilts.]

WESTERAA, [SWEDEN.]

WESTERAATEN, ISLANDS OF. [TROONHEIM.]

WESTERHAM, [KENT.]

WESTERIN. [SWEDEN.]

WESTERN AUSTRALIA extends over the western portion of the Australian continent, and comprehends, according to an arrangement lately made by government, all the countries lying west of 125° E. long., so that the boundary-line between the two is determined by the Greenwich meridian. This portion joins the Indian Ocean west of Cambridge Gulf and the Southern Sea, nearly in the middle of the Australian Bight. Thus Western Australia contains about one-fourth of the whole continent, and lies between 30° and 14° S. lat. and between 113° and 129° E. long.

We are particularly acquainted only with that portion where British colonies have been settled, and of which a description has been given under Swan River [vol. xxii., p. 367]. The remainder is still more unknown. Two years ago, says a correspondent, Mr. Eyre, travelled along the coast from Adelaide on the Gulf of St. Vincent in South Australia, to King George's Sound in Western Australia. According to the report that has reached us, he found this tract of coast to be nearly a useless waste, consisting chiefly of sandhills, or of a gravelly soil on which there was a scanty vegetation. It is remarkable that, in this journey of more than 1000 miles, his progress was not once impeded or retarded by any large river. Thus we
may now consider it a well established fact, that along the southern coast of Australia, which extends about 2000 miles, only one large river, the Murray, finds its way to the sea, and it seems probable that the countries adjacent to this coast on the west of the Murray River, like many other extensive countries near the tropics, are entirely destitute of rain. If this should be found to be so, this tract may be considered desert, like the Sahara of Africa.

The country north of the settlements and contiguous to the sea is certainly better, but as far as it has been explored, that is, to the vicinity of Shark Bay (22° S. lat.), it contains no large tracts of land fit for cultivation, or available for other purposes, though the surface is generally level, and in some places rises into hills of moderate elevation. North of Shark Bay, even the outline of the coast is very little known, with the exception of some projecting portions. It appears to present a much greater variety of useful products than any other part of Australia: it consists of numerous widely-projecting promontories and headlands, between which there are wide bays, and several narrower inlets, which penetrate inland to a great distance from the open sea. Some of the projecting parts are very high, and give a considerable elevation. We know very little of the natural powers of Tasman Land, as the coast only has been slightly examined, and nothing is known of the interior, even at the distance of two or three miles inland.

The low-lying portion of indifferent quality, and this is one of the reasons of the slow progress of the colony. It would however probably have improved much more rapidly in population and cultivation, if shortly after its settlement other countries in the neighbourhood, as South Australia and part of New South Wales, had not been opened to those who left their country with a view of settling in the southern hemisphere. As all these countries are more fertile than Western Australia, they have recently attracted all the emigrants from British India, and several families which formerly had settled in Western Australia have removed to South Australia and Port Phillip. It therefore cannot be a matter of surprise, when we find that the population is stationary. It consisted, in the year 1850, of 2070 individuals; and in 1833 it amounted only to 2154 persons.

No grains or roots are cultivated, except those grown in England. The principal objects of agriculture are wheat, barley, oats, rye, and potatoes, of which the average production in 1839, was 300,000 bushels, of which 30 of barley, 35 of oats, 20 of rye, and four tons of potatoes, shows that the soil, though not distinguished by fertility, will repay the labour bestowed on it. Maize is not grown, though, on the other side of the continent, in New South Wales, it constitutes an important article of cultivation. We are not acquainted with the circumstances which have prevented the cultivation of this useful grain. The progress of cultivation has been much more rapid than that of population. The cultivated area is 2,000,000 acres under crop, in 1834, which rose to 1,066,000 in 1839, and in 1839 it amounted to 2,258. More than half of this area is sown with wheat, namely, 1,481 acres (1839). Barley is also cultivated to some extent; oats and rye much less. We do not know of the attempts to transplant to this region the fruit-trees of Europe have been successful.

The domestic animals imported from Europe thrive very well, and increase rapidly, especially sheep, goats, and swine, as appears from the following table:

<table>
<thead>
<tr>
<th>Number of Domestic Animals.</th>
<th>1834</th>
<th>1839</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horses</td>
<td>162</td>
<td>382</td>
</tr>
<tr>
<td>Hogs</td>
<td>350</td>
<td>1,394</td>
</tr>
<tr>
<td>Sheep</td>
<td>3,545</td>
<td>20,829</td>
</tr>
<tr>
<td>Goats</td>
<td>492</td>
<td>3,814</td>
</tr>
<tr>
<td>Swine</td>
<td>374</td>
<td>1,299</td>
</tr>
</tbody>
</table>

What has been said of the botany and zoology of Australia, in vol. iii. p. 123 and 124, is applicable at least in a great measure, to Western Australia. It does not appear that metals of any kind have been found there, but a few quantities have been opened, from which limestone and marlstones are obtained. On the island of Rottemeal, which is nearly opposite the entrance of the harbour of Fremantle, there is a salt-work, in which a moderate quantity of salt is made.

There are several harbours in the settled part of Western Australia, but only that of Fremantle at the mouth of the Swan River, and that of Albany in King George's Sound, are visited by large vessels. The subjointed table shows the number of vessels which visited these two ports in 1839, and also the countries to which they belonged.

<p>| Vessels Visiting the Ports of Western Australia in 1839. |
| ----- | ----- | ----- | ----- | ----- | ----- | ----- |</p>
<table>
<thead>
<tr>
<th></th>
<th>From Great Britain and Colonies</th>
<th>From United States</th>
<th>From Other Foreign Countries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles</td>
<td>Tons</td>
<td>Miles</td>
<td>Tons</td>
<td>Miles</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>Fremantle</td>
<td>18</td>
<td>3,596</td>
<td>12</td>
<td>3,486</td>
</tr>
<tr>
<td>Albany</td>
<td>20</td>
<td>8,831</td>
<td>8</td>
<td>2,687</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>8,837</td>
<td>20</td>
<td>6,179</td>
</tr>
</tbody>
</table>

History.—That part of the Australian continent which is now comprehended under the name of Western Australia was called, up to the end of the last century, New Holland, which name had been given to it by the Dutch navigators, who discovered all its coasts in the seventeenth century. By various expeditions it was visited more than once, until a century before that time had annually sent several vessels and even fleets to the East Indies, they never approached the coasts of Australia, because their trade lay along the eastern shores of Africa and through the Channel of Mozambique. But this changed for commercial relations with the islands of the Indian Archipelago, in the expectation of large profits from the spice trade, followed a more direct route between the Cape of Good Hope and the Sunda islands, and they soon fell in with the western coast of Australia. Dirk Hartog discovered, in 1616, the most western point of that continent, Dirk Hartoge's Island, and sailed along the coast northward to North-west Cape. The adjacent country was called by him Endrechts Land, from the name of the vessel in which he sailed. Three years later (1619) Van Edels fell in with the coast south of Endrechts Land, which received his own name, but is now called Australia. [Swan River, vol. xxiii., p. 571.] In 1822 that portion of the coast was explored by Tasman, in 1844, in his second voyage [Tasman, vol. xxiv., p. 77], and received from him the name of Van Diemen's Land, but as the large island south of Australia is known by this name, geographers have generally substituted that of Tasmania. From that time Western Australia was visited by the navigators of several nations, but never examined, except that Dampier surveyed Shark's Bay. Captain King surveyed a great part of the northern coasts, and several vessels from England's triumph, under Captain Baudin, in 1805. Captain Stirling visited the Swan River in 1823, and its favourable representations gave rise to the settlements on its banks. [Swan River, vol. xxiii., p. 370.]


WESTERWALD. [GERMANY.]

WESTMANNLAND. [SWEDEN.]

WESTMANNIA. [SWEDEN.]
WESTMINSTER. [MATH. WEST.]

WESTMINSTER, a city in the county of Middlesex, one of the constituent parts of the British metropolis, containing the royal residence, the houses of the legislature, the supreme courts of law, the chief public offices of the executive government, and the magnificent abbey church of St. Peter, which is one of the places of interment for persons illustrious by their talents, position, political character, or military and naval achievements. [LONDON.]

The city and its situation. The surveys of the City of London, and its various parishes, form a part of the eastern side by the left bank of the river Thames. The boundary leaves the river almost midway between Waterloo Bridge and Hungerford Market, and with a little deviation follows the course of the river, being represented by the line of St. George's Fields till it reaches Drury Lane; it then moves northward through Leadenhall Street and the Temple, runs in an irregular line westward, keeping to the south of Lincoln's Inn Fields till it reaches Drury Lane; it again turns northward and then northward runs by Castle Street, West Street, and the Commercial Road, to the Thames just in front of Chelsea Hospital. The area of the city is 2500 acres, the number of houses, by the census of 1831, 21,682, namely, 20,616 inhabited, 894 uninhabited, and 412 building; the number of freemen and freewomen 46,004 families, or 201,842 individuals. This statement does not include the population of the liberty of the duky of Lancaster, now added to Westminster for parliamentary purposes, or the area or position of the present county of the Savoy; both which are taken as parts of Osolston hundred in the county of Middlesex. The general description of the city is given elsewhere. [LONDON.]

In the present article we propose to give an historical sketch of its origin and of the extension of its buildings and population.

The city appears to have owed its origin to a church erected here by Sæbyrht or Sebert, king of the East Saxons (or, to follow Camden, of the East and Middle Saxons), on the site of which was afterward built the Abbey Church of St. Peter, in the supremacy of his uncle Æthelbyrht, or Æthelbert, king of Kent, and Bretwalda, or lord paramount, of the Anglo-Saxons, and had been converted to Christianity after his uncle, by the preaching of Mellitus, who was one of the companions of Æthelbert. The mission of Mellitus to the East Saxons took place a.d. 604; and as Sæbyrht appears to have died about the same time as Æthelbyrht, a.d. 616, we have an approximation to the date of the foundation of the church, which must have been some time between those two dates. Sæbyrht and his wife Aldegoda were buried in the church of St. Peter, which appears to have been afterwards called West-Minster from its position with relation to St. Paul's, the metropolis church. The early churches of London were of small size, and the antiquity of the church to a much higher period, and have affirmed that St. Peter himself visited Britain and erected a small chapel or oratory here; others, more moderate, ascribe the first ecclesiastical structure on the spot to King Æthelred, on the site of which the present abbey church was reared in the latter part of the second century, and to have built a church here from the ruins of a heathen temple which had been overthrown by an earthquake. The existence however of any church prior to that raised by Sæbyrht is, to say the least, very doubtful, and at the time when that was erected the place was in so uncultivated a state, that the Saxons called it 'Thorome,' the 'Isle of Thorns.' The island was formed by an arm of the river, called Long Ditch, now a common sewer; or probably by the removal of a body of water from the higher ground emerged, on which the church was built.

The church of Sæbyrht appears to have been destroyed by the Danes about the time of Alfred, and remained desolate until the reign of Edgar, who caused it to be rebuilt, and established in the place, about a.d. 965, a Benedictine priory or abbey of twelve monks, who were however poorly provided for. If this establishment was not an abbey from its foundation, it became one not very long after. The church nevertheless appears to have been held in high esteem, for, a.d. 1046, the body of Queen Eleanor, who died at Westminster, was brought here for burial. The body of the dead king was taken up the same year by order of his half-brother and successor Hardecanute, or Hardicanute, and thrown into a ditch. In the reign of Edward the Confessor, successor of Hardecanute, Westminster Abbey was returned to the palace built or occupied by Edward appears to have been on or near the same site as the residence of succeeding kings and of the present houses of parliament: it has been dedicated to Olave, and to St. Katherine, St. George's Hanover Square.

It is not unlikely that Westminster had occasionally the residence of the Anglo-Saxon kings before Edward's time, as Scotland Yard is said to have derived its name from a palace assigned by Edgar as the residence of a clerk of the church. Edward was buried in it, as also Editha, his wife, daughter of Earl Godwin. Edward built also a parish church, that of St. Margaret, for the inhabitants, who previously had the use of a part of the abbey church.

The parish of St. Martin-le-Strand originally comprehended the whole of the present city and liberties, with the exception possibly of the two parishes of St. Mary-le-Strand and St. Clement Danes. The boundaries of the parish as described in a judgment, a.d. 1222, by Cardinal Stephen Langton, and confirmed by the other arbitrators, on occasion of a dispute between the bishop of London and the abbots and monks of Westminster, as to whether the abbey was subject to the bishop's jurisdiction. The original judgment was given by two bishops, Epeicopis et Decanis Londinensibus et Assarvannus. The parish also comprehended several 'villae' beyond the city limits, as Knyghtebredige (now Knightsbridge), Westburne (Westbourne), and Satyngtonn (Paddington), with its church of St. Martin-in-the-Fields. Westminster Abbey was not included in the parish, though surrounded by it on every side. When this church of St. Martin was erected it is not known; it was perhaps originally a chapel of the monks of the abbey, who had a garden near the church, called the Abbey Garden, and from the churchyard was, in a.d. 1059, the common burial-place of the Danes, and in it part of the remains of King Harold I. were deposited, after being disinterred from their resting-place in St. Peter's abbey by order of Hardicanute. The Strand (so called in the Saxon Chronicle) was at this time apparently the road or street between London and Westminster, and upon it Earl Godwin and his son Harold drew up their land forces in their insurrection against Edward the Confessor, a.d. 1052. The church of St. Martin and St. Peter's, Westminster, was at the time of Langton's judgment (a.d. 1222); but how long before cannot be ascertained. St. Mary's church was then called the Church of the Innocents, or of St. Mary and the Innocents; and there is reason to think, from the notice of it in 1063, that it was the church of the parochial. St. Martin's was made parochial some time between the delivery of the judgment and the year 1063. The parish was formed by dismembering all the northern and southern parts of St. Peter's parish, which were not only the present parish of St. Martin, but also those of St. Paul, Covent Garden; St. Anne, Soho; St. James's, and St. George's, Hanover Square.

After the Conquest, Westminster continued to be the usual residence of the kings of England, and St. Peter's abbey the usual place of their coronation. Edward I. afterwards fixed in the bottom of the inauguration ceremony.
a spot which he had brought from Scotia in Scotland, the possession of which was thought to secure possession of the government of that kingdom. William Rufus built a large hall as a banqueting-room to the palace; and this, with other public works which were carried on at the same time, was made the occasion of great oppression to the people. The garden walls were thrown down in 1057, perished thereby. This banqueting-hall was pulled down and rebuilt by Richard II., and is the present Westminster Hall.

Henry III. began to rebuild the abbey church of St. Peter's, and in 1244 he commenced the antediluvian restoration of Edward the Confessor to be pulled down in a.d. 1245. He had previously built a new Lady-chapel. He was buried in the new church, a.d. 1273, and several of his successors on the throne have also been buried there. The church was not completed until after Henry's death. In a.d. 1277 that part of the abbey which had been rebuilt was much damaged by fire; and in a.d. 1303 the king's treasury, then kept in the abbey, was robbed of a vast sum (said in Allen's 'History of London,' but we know not on what authority, to have been 100,000l.); and the abbey and nearly fifty of its monks were apprehended and sent to the Tower on suspicion of being concerned in the robbery; twelve of them were detained in prison two years.

The bishop of the abbey of St. Peter's a fair and a market, which were held at Tounthill, on the west side of the abbey, a locality known in later times as Tothill Street and Tothill Fields. The woollen or wool-market, of the metropolis was also established in Tothill Fields. The court offices were in a separate portion of the place, which was then quite separate from London. Between them was the village or hamlet of Charing, the last place where the body of Eleanor, the faithful and beloved queen of Edward I., rested on the way to Westminster. Here it was that the Lady-chapel of Charing Cross, one of those erected by Edward at all the places where the body had rested, was demolished during the troubles of the reign of Charles I.; but the place where it stood has retained its name.

In the reign of Queen Elizabeth, the Lady-chapel of St. Peter's, built by Henry III., was pulled down, and in place of it was built the more extensive and costly structure now known as Henry the Seventh's Chapel. This was the last important addition or alteration made in the abbey before the Reformation, or indeed until early in the last century, when the western towers were rebuilt under the direction of Sir Christopher Wren. Since that time a considerable part of the abbey has been renovated, but no additions have been made since that time.

At the dissolution the yearly revenues of St. Peter's abbey were estimated at 3077l. 9s. 4d. gross, (Speed), or 3471l. os. 2d. clear (Dugdale). A MS. valor makes the revenue 3033l. 17s. 4d.; and according to another account (Stevens) it was 3305l. 10s. 4d. from this time the abbey had little other revenue than the abbey was considered to be the second in the kingdom. On the dissolution Henry VIII. first converted it into a college of secular canons, appointing the ex-abbot to be dean; but he soon after changed his mind, and established a bishopric at Westminster, assigning to it the county of Middlesex as a diocese, and appointing to the abbey, now made a cathedral, a dean and twelve prebendaries. This was about a.d. 1541. On the translation of the first bishop, Thomas Wriothesly, who had wasted the revenues, to Norwich, a.d. 1550, the bishopric was discontinued; but the chapter remained till the time of Mary I., who again made it a Benedictine abbey, though retaining popularly the designation of Westminster Abbey; but in the reign of Elizabeth it was made a collegiate church, with the troubless of the troubles of the time of Charles I. and the Protectorate, it has since continued to be. Westminster School is a part of the collegiate establishment, and is endowed out of the revenues of the former abbey.

At the Reformation, Westminster comprehended the parishes of St. Margaret, St. Martin-in-the-Fields, St. Clement-Danes, and St. Mary-le-Strand; and the chapel of St. John the Baptist, in the Savoy, a pre-eminently attached to the house erected by Peter, Count of Savoy, which was given by Henry III. The palace, a.d. St. Mary-le-Strand was pulled down by the Protector Somerset, in order to the erection of his mansion of Somerset House, which occupied the site; and the inhabitants long remained without a parish church, attending either at St. Clement-Danes or at the Savoy Chapel. Early in the reign of Queen Elizabeth, about a.d. 1560, according to the plan published by Vertue in 1737, Westminster was united to London by an unbroken line of buildings, extending from the palace of Whitehall at Westminster, by Charing Cross and along the Strand; those on the south side of the Strand consisting chiefly of the mansions of the nobility, with gardens extending to the river; and those on the north side, between Drury Lane and St. Martin's Lane, being also mansions, having gardens behind them; then a park or garden, apparently part of the former Convent (or Abbey) which had been given to the presentation by the neigbouring houses extending along what is now Cockspur Street to the end of Pall Mall; but the Haymarket was a country road, separated from the fields by a hedge on each side. The Mews at Charing Cross existed, and their eastern wall, with that of St. Martin's churchyard and of the park or garden, noticed as extending at the back of the houses on the north side of the Strand, lined St. Martin's Lane on each side for some distance; but the greater part of that lane was lined with hedges, and had fields on each side, which were used for feeding cattle and other purposes.

In the neighbourhood of the church of St. Clement-Danes, and at the Strand end of Drury Lane, about Clement's Inn, the houses were more thickly grouped, but the greater part of Drury Lane was skirted by public buildings, and Charing Cross, built on the site now occupied by Lincoln's Inn Fields and the neighbourhood, and on the other, the site of the present Covent Garden Market, Long Acre, and Castle Street. Hyde Park and St. James's Park and Palace were in existence at this time. Henry VII. (1485-1509) had formed the foundation of Westminster Abbey by the purchase of the former and latter site of the Savoy Abbey, which had been attached to the abbots of St. Peter's, Westminster, and had been obtained by an exchange by Henry VIII., who also erected St. James's Palace and laid out St. James's Park. Whitehall Palace, previous to the time of Henry VII., had been the residence of York, has been purchased by the same prince, in consequence of a fire which had destroyed the greater part of the old palace of Westminster. Speed's plan of Westminster, published in 1610, a few years after Elizabeth's death, gives a city but little more extensive than the plan of 1500, showing that during the reign of that princess there had been little change.

In the interval between the publication of Speed's plan and the close of Charles I.'s reign, the greater part of the buildings took place in the part of Westminster adjacent to the Strand. The greater part of the area contained within the limits of the city of Westminster east of St. Martin's Lane had been covered with streets; and westward of the Strand the irregular line formed by Wardour Street, Pulteney Street, Warwick Street, and Piccadilly nearly to the Green Park, at that time still united to St. James's Park. Lincoln's Inn Fields, the scene of Lord Russell's execution, the piazza or square of Covent Garden, now a market, Leicester Fields, now Leicester Square, and Soho Square, then called by some King Square, had been laid out and built. The city had also extended westward along the south side of St. James's Park, and southward, along Millbank, to that which forms the Lambeth shore.
Sohn Martin's had been assigned as a parish. But between A.D. 1717 and 1720, when Strype published a new edition of Stow's Survey with A Map, the buildings had ceased to be used during a tenure of 15 years by a subscriber, the Bond Street, inclusive of those two streets: toward the Piccadilly and of Old Bond Street the houses had extended westward to about Clarges and Half-Moon Streets, and along Piccadilly itself they had already reached Hyde Park Corner. Handel's GermanJaehoc was, about 1735-6, let for a term. In 1788 the buildings had extended along the whole south side of Oxford Street, and nearly the whole space between Piccadilly and Oxford Street was covered with buildings, as the result of malversation, for the sale of a western corner about Berkeley Square and Mayfair, which were not fully covered as at present till the reign of George III. The churches of St. George, Hanover Square (A.D. 1724), and St. John the Evangelist, near Millbank (A.D. 1727), had been built and made parochial. St. George's parish was dismembered from St. Martin's-in-the-Fields, and St. John's from St Margaret's. Westminster bridge had been begun, although it was not completed and opened until A.D. 1747.

During the latter part of the eighteenth century considerable increase of the buildings of the city of Westminster took place. Houses were built along the south side of the road to Knightsbridge, beyond the Green Park, which was now made distinct from St. James's Park; Berkeley Square was formed, in 1720, a street extending from the King's Road and Grosvenor Place and Lower Grosvenor Place, with some of the adjacent parts of Pimlico, were built. These parts were built before 1780; and by the close of the century Bulstrode and many lines of buildings along the Chelsea Road had been erected.

By these successive extensions nearly the whole of the area of the city had been covered with streets and houses. The only considerable space not so occupied, with the exception of the Anglican, was in 1780-5, near Oxford, Westh- ton, Marlborough, Chelseafield, and Devonshire houses, was near the south-western corner of the space comprehended by the boundaries of the city of Westminster. This space partly consisted of the open ground of Tothill Fields, part of the ancient garden of the Knights of St. John of Malbun Place and Edward Street, by William, Ear of Rutland, known as the Five Fields, and other fields between Pimlico and Knightsbridge. During the present century the extension of buildings of various kinds has nearly covered this area. The Five Fields and the fields toward Knightsbridge are now occupied by Belgrave and Eaton squares, and Ebury Street, which form, with their neighbourhood, one of the handsomest quarters of the metropolis: Tothill Fields and the adjoining buildings, are enclosed by the present Millbank Prison or Penitentiary; by Vincent Square, the ample enclosure of which forms the playground of the Westminster scholars; and by various streets adjacent to them. A part of the North-Houses Gardens is still occupied on the north side of the Grosvenor Place, and the park of the Grosvenor Place, which was converted into a canal the 'Grosvenor Canal,' with a basin and wharfs.

Of the population of Westminster until the present century we have no accurate account. It is said by Mr. Rickman, but we know not from what data, to have been about 130,000 at the beginning of the last century. In Middlesex's History of London, the number of houses, at a period, we believe, somewhere about the year 1737, is given at 13,445, which, allowing seven persons to a house, which is an average number, would give an estimate of 94,115 as the number of inhabitants. This estimate and Rickman's cannot be made to agree except by the supposition of a diminution of population in the earlier part of the last century, a supposition which the great increase in the building at that time proves unfounded; or by adopting a higher average of persons to each house, which we are not disposed to admit. We are inclined to think that Rickman's estimate for the beginning of the century is altogether too great, as it would not allow an increase of more than 30,000 during the whole century, which is by no means commensurate with the great increase of the population. In 1811, the population was 108,119, and in 1821, 182,683; in 1831, 226,680.

The municipal government of Westminster was, until the formation, in the hands of the abbot and monks of St. Peter's Abbey. It was finally divided into a deanery and chapter, till 1585, when an act was passed for regulating it. The dean and chapter now appoint a high steward, who holds his office, except in cases of misconduct, for life. The dean and chapter appoint a deputy, who is confirmed by the dean and chapter, and who presides at the court leet and at the quarter-sessions. The dean appoints a high constable, who is confirmed in office by the high steward, and is returning officer at the election of members of parliament. There are several police-offices and courts of requests within the city. A court of record for the liberty of the Duchy of Lancaster is held at Somerset House.

Westminster has had no mayor since the 1st year of Edward VI. Its elections during the latter part of the last century and during the present have, from the extent of the constituency and the vigour of the struggle, usually excited great attention. The number of voters was in the year 1840 it was 14,254, showing a decrease in four years of 1411.

(Camden's Regi6, Regi6n, &c, in Ecclesia B. Patri West- monasteri seuptfi; Cruft's Antiquities of St. Peter's, West- minister; Stow's Survey of London; Maitland's, Hughson's, and Arden's History of London; Brickwood's Westminster, &c. There are several police-offices and courts of requests within the city. A court of record for the liberty of the Duchy of Lancaster is held at Somerset House.

Westminster Assembly of Divines. The principal measures of the Long Parliament, which preceded the dissolution of this assembly, were, briefly stated in the order of time, the following:—

The parliament met on Tuesday, the 3rd of November, 1640. In the front of the grievances about which the Commons immediately began to bear themselves were cases of those relating to religion. The occasion of the first day on which the house entered upon business, Sir Benjamin Rudyards delivered a long speech, which he commenced by observing that they were assembled to do God's business and the king's, and then continued:—Let religion be our primary care; for all things else are but adieteras to it. We well know what disturbance hath been brought upon the church for vain petticoat trife. How the whole church, the whole kingdom hath been troubled where to place a man according to the quality of his ministry, their wives, families, and children undone, equal law, against conscience, against all bowels of compassion, about not dancing on Sundays, and this, belike, is the good work in hand which Dr. Heylin hath so often celebrated in his bold pamphlets. All their actions are so full of mixtures, involutions, and complications, as nothing is clear, nothing sincere in any of their proceedings, They have so brought it to pass that under the name of Puritans all our religion is branded, and the very name is justly accounted the very luxury and countenance. The course subsequently taken by the house was in perfect accordance with the key-note thus struck.

On Monday, the 18th of November, arrived the Commissioners from the nation and army of Scotland, attended by a large staff of chaplains, whose serx?d sermons in St. Anthoni's Church soon added immensely to both the rent and the numbers of the professors of Presbyterianism.
were, however, the citizens of London. The noble commissioners themselves also, who, no more than the preachers, dissembled their desire to see the Covenant the law of both countries, are believed to have been active instigators of many of the measures that the House of Commons then passed. They carried through both without and within the walls of parliament. On Friday, the 20th, a vote was passed by the Commons, 'That at the receiving of the Commonse next Sunday it was the desire of the House that the communion-table may be removed,' and the address of the Lords. On the 11th of December, was presented by Alderman Penuington the famous root-and-branch petition 'from many of his Majesty's subjects in and about the city of London and several counties of the kingdom,' setting forth that the spiritual estates within the city, having proved prejudicial and very dangerous both to the church and commonwealth, and praying that the said government, with all its dependencies, roots, and branches, might be abolished, and the government of the Church of God's word' established in its stead. This petition, which is supposed to have been the contrivance of the Scotch commissioners, is said to have had 15,000 signatures. On the 16th and 18th of December, after the matter had been repeatedly brought in the House of Lords, the Commons agreed to pass the bills for establishing a commission against the powers assumed and the new canons passed by the convocation of the clergy then or lately sitting. Immediately after this commenced the attacks upon Laud, archbishop of Canterbury, and the other bishops. In the meantime, the proceedings of the sub-committee of the Committee of Religion, denominated the 'Committee for Preaching Ministers,' appointed 'to consider how there may be preaching ministers set up where there are none, and how to maintain the present, if the good of the state and of the kingdom, and the worship and service of God,' was brought in, read twice, and committed the same day. On the 10th of March it was resolved 'That the legislative and judicial power of bishops in the House of Peers in parliament is a great hindrance to the purity and due function, prejudicial to the commonwealth, and fit to be taken away by bill; and that a bill be drawn to that purpose.' The next day it was in like manner resolved that a bill should be brought in to prevent bishops or any others by force of the Commons in the commission of the peace, or having any judicial power in the Star-Chamber or in any civil court; and on the 28th, that another bill should be drawn to incapacitate them for being employed as privy-councillors. All these bills were brought in with great celerity, and for advancing the worship and service of God, was brought in, read twice, and committed the same day. On the 10th of March it was resolved 'That the legislative and judicial power of bishops in the House of Peers in parliament is a great hindrance to the purity and due function, prejudicial to the commonwealth, and fit to be taken away by bill; and that a bill be drawn to that purpose.' The next day it was in like manner resolved that a bill should be brought in to prevent bishops or any others by force of the Commons in the commission of the peace, or having any judicial power in the Star-Chamber or in any civil court; and on the 28th, that another bill should be drawn to incapacitate them for being employed as privy-councillors. All these bills were brought in with great celerity, and for advancing the worship and service of God, was brought in, read twice, and committed the same day. On the 10th of March it was resolved 'That the legislative and judicial power of bishops in the House of Peers in parliament is a great hindrance to the purity and due function, prejudicial to the commonwealth, and fit to be taken away by bill; and that a bill be drawn to that purpose.'

Meanwhile, at three o'clock on the morning of the 23rd of November, 1641, after a debate which had lasted twelve hours, the Commons, by a majority of 159 to 148, had passed the famous Remonstrance, or Declaration of the State of the Kingdom, addressed to the king, in which they said: "We believe the nature of the church, that there may be a general synod of the most grave, pious, learned, and judicious divines of this island, assisted with some from foreign parts professing the same religion with us, who may consider of all things mattering to the observances of the church, and represent the results of their consultations unto the parliament, to be there allowed of and confirmed, and receive the stamp of authority, thereby to find passage and obedience throughout the kingdom.' This is, we believe, the first distinctly recorded intimation given by the parliament of their wish to refer the question of religion to a clerical convocation, and it sets forth very explicitly the limits within which they proposed to commit the arrangement of the constitution of the national church, as it was passed, and even before it was presented to the king.

The course of events now proceeded with accelerated rapidity. On the 30th of December, 1641, twelve of the bishops were committed on a charge of high treason for having protested against the validity of any acts of parliament that should pass while the popular tumults around the House of Lords prevented them from taking their seats. On Tuesday, the memorable 4th of January, 1642, Charles struck, ineffectually, his first blow at the parliament by his desperate attempt to seize the five members. On the 10th he rode to Whitehall, and on the 12th, he rode to Westminster with his capital, till he was brought thither a prisoner to be tried and led to execution. On the 22nd of August he erected his standard at Nottingham. On the 1st of September the Commons, and on the 10th the Lords, in London, are the same. Finally, the 30th of November, 1643, there should be no archbishop, bishops, or clergy, of any degree, according to the word of God, to have or lead any church, or of or within any cathedral or collegiate churches in England or Wales; that their names, titles, jurisdictions, offices, and functions should cease, determine, and become absolutely void; that all the manors, lordships, and estates, belonging to any bishop or bishopric should be for the use of the commonwealth, and for the propagation of the spiritual state and service of God; and all their subjects, both town and country, who were subjects of the bishops, to become subjects of the king, or of the crown. On this last occasion the king was not present, but his eldest son, the Duke of York, was with him. This bill was afterwards converted into 'An Ordinance of the Lords and Commons in Parliament,' and passed 23rd June, 1642.

The persons nominated in the ordinance to constitute the assembly consisted of a hundred and twenty-one clergymen, together with ten lords and twenty commoners as lay assessors. Among the commoners were John Selwale, Francis House, Sir Henry Vane, senior and junior, John Glyn (the recorder of London), John Whitelock, Sergeant Wild, Oliver St. John, John Pym, and John Maynard. Among the most distinguished of the clerical members were, Dr. Ralph Brownriggs, bishop of Oxford; Mr. Wentworth (the rector of Saint Peter); Sir Edmund Calamy, Dr. Francis Clarke, Thomas Gataker (the editor of Marcus Antoninus), Thomas Coleman, Thomas Gataker (the editor of Marcus Antoninus), Thomas Goodman, Dr. John Hacket (afterwards bishop of Lichfield), Dr. John Lightfoot, Dr. George Morley (afterwards bishop of Exeter), Lord Wharton (the younger, afterwards bishop of Gloucester), Philip Nye, Dr. John Priest (bishops of Worcester), Dr. Edward Reynolds (afterwards bishop of Norwich), Dr. Robert Saunders (afterwards bishop of Lincoln), Dr. James Usher (archbishop of Armagh), George Walker, Dr. Samwel Ward, Dr. James Wallis (the mathematician). Several other persons (about twenty in all) were appointed by the parliament from time to time to supply vacancies occasioned by death, secession, or otherwise, who were called superadded divines. Finally, two lay assessors, John Lord Milton and Sir Abraham Johnson of Warrington, and four ministers, Alexander Ben-
The Assembly of Divines had been forbidden by the king in a proclamation dated the 22nd of June. The only effect however of that prohibition had been to induce the greater number of the members of episcopal principles to refrain from attending. On Saturday, the 29th of June, sixty-nine clerical members assembled in Henry the Seventh's chapel, in Westminster Abbey. They appeared, as it is recorded, not in their canonical habilis, but mostly, after the fashion of foreign Protestant clergy, in black caps. The presence of so many persons appeared to have ranged between sixty and eighty. About twenty-five of the persons who had been nominated members of the Assembly (including one or two who had died) were present in their seats; and even of the sixty or seventy who attended irregularly, only from twelve to twenty were frequent speakers.

In theological doctrine the divines of the Westminster Assembly were almost to a man of one mind. They were all, or nearly all, Calvinists. Their Shorter Catechism was drawn up by Burroughs and others, and having been adopted by a unanimous vote of that body on the 17th of August, was then forwarded to the English parliament and the Assembly of Divines at Westminster for their consideration.

The Second of October, 1647, the Assembly of Divines commenced its proceedings, and the Assembly of Committee of both houses, having been twice attended with a sufficient number of members to transact business, again assembled together. The house of commons, however, was not present. The preamble was laid on the table, and the committee proceeded to the consideration of the same. The reading of the preamble was long and tedious. The committee proceeded to the consideration of the same.
The only work that has appeared professing to be a History of the Westminster Assembly of Divines is a 12mo. work, intitled 'Preface to the Life of the Late Rev. Mr. Hetherington, then minister of Torphichen, published at Edinburgh in the present year, 1843. The reader is referred for a further account of the sources of information on the subject to Mr. Hetherington's Preface, and to a note on p. 90 of 'Atton's Life and Times of Alexander Henderson,' 8vo., Edinburgh, 1836.

WESTMORELAND, or WESTMORLAND, a northern county of England, bounded on the north and north-western side by the county of Cumberland; on the north-eastern side, it is separated by Ullswater Lake, by the river Eamont, which flows from Ullswater into the Eden, by the Eden itself, and by the Crowndale, another feeder of the Eden: on the south-west it is bounded by the district of Furness in Lancashire, from which it is separated in one part by Little Langdale Beck, Elter Water, and the Brathay, a stream flowing into the lake of Windermere, or Winandermere, and by the western shore of Windermere itself; the boundary-line then passes round the foot of the lake, up its eastern shore to its head, and ascends in an easterly direction to the head of the little river Wincer, which separates Westmorland and Lancashire during its whole course to its junction with the estuary of the Ken, or Kent, just where it opens into Morecambe Bay; or the county is bounded by the south-east, east, and north-east by Yorkshire, from which, in different parts, it is separated by the river Lune and its feeder the Rather, by the upper part of the Eden, or its feeder the Matt, following the line of that river for a short distance on the north-east it is bounded by the county of Durham, from which it is separated throughout by the upper course of the Tees. It lies between 54° 10' and 54° 42' N. lat., and between 2° 9' and 3° 10' W. long.

The name of the county is derived from the greatest direction or length is from north-east to south-west, from the division of the three counties of Cumberland, Westmoreland, and Durham, on the bank of the Tees, to the junction of Westmorland and Lancashire, on the shore of the Kent, a little way from the mouth of the Kent, more than 41 miles: the greatest breadth, measured at right angles to the length, is from Bowfell, on the border of Cumberland, to the county stone at the junction of the three counties, Yorkshire, Lancashire, and Westmorland, 39 miles. The area of the county is estimated at 765 square miles; the aggregate areas of the several parishes are estimated at 485,990 acres, or rather more than 759 square miles; the population by the different enumerations of the present century was as follows: in 1801, 43,411; in 1811, 45,922; in ten years 10 per cent. 1821, 51,350; increase 12 per cent. 1831, 55,041; increase 7 per cent. 1841, 56,469; increase 2½ per cent. It is in area the twenty-ninth of English counties; in amount of population (excluding the town) the thirty-first of the year 1831, and it is criss-crossed by roads, with an auxiliary number, to facilitate comparison, the thirty-eighth, being exceeded by all others, except Huntingdonshire and Rutlandshire; and in density of population by far the lowest of all, has only 72 inhabitants to a square mile; Cumberland, the county in this respect next above it, having 111 persons to a square mile. By the census of 1841, Westmoreland was surpassed in population by Huntingdonshire. Appleby, the county town, is in the northern part of the county, in 54° 34' or 54° 33' N. lat. and 2° 29' W. long., 231 miles in a straight line from London; 2704 miles by the road through Barnet, Hatfield, Bignoleswood, Norman Cross, Stamford, Newark, East Retford, Doncaster, Aberford, Boroughbridge, Catterick, Greas Bridge, and Brough; or 280 miles by the Northern line. From Preston and Lancaster railways to Lancaster, and thence by coach-road through Kendal and Shap.

Surface and Geography.—Westmoreland is wholly mountainous, save the eastern side and the centre are occupied by the mountains of the Cumbrian group, which are separated from the Pennine Chain by the valley of the Eden. The principal ridge of the Pennine Chain enters the county close to the northern border just to the south of Cross Fell, and extends across Millburn Forest south-south-east by Brough to the border of Yorkshire in Arkengarth Forest; it then turns south-south-west, and runs, above Kirby Stephen, to the head of the valley of the Eden. On the west side of this ridge the mountains have a steep and almost precipitous descent into the valley of the Eden; on the east, they consist of a broad range, bounded by the boundaries of Westmoreland, subsiding more gradually into the wide valley or plain of the Tees, which occupies the south-east of the county of Durham and the north of Yorkshire. On each side of the ridge a number of transverse valleys are drained by small streams: those on the west side flowing into the Eden; those on the east forming the upper waters of the Tees, the Swale, and the Ure or Yore. The principal mountains of the Pennine Chain in Westmoreland are: Shap Fell (flanked on the west by Dunron Pike and Knock Pike), Eagles' Chare, Scordale Head (flanked on the south-west by Murton Pike), Warcop Fell (which is flanked by Little Fell on the east and Roman Fell on the west), Middle Fell, Missgram Fell, and Helbeck Fell, all northern part of the depression, through which the river below passes. South of that depression are a number of summits grouped together, and forming the district of Arkengarth Forest, of which the Nine Standards (2136 feet high), Dowphin Seat, Browner Bell, and Hugh's Seat, the greatest border of Westmoreland and Yorkshire, are among the principal. The northern part of the Pennine Chain is in Millburn or Milburn Forest: the part near the bend where the range turns to the south-south-west is in Arkengarth Forest, which some make to a part of Lancashire and others of Yorkshire, and the southern part is in Swaledale Forest and Mallerstang Forest.

The principal ridge of the Cumbrian Mountains crosses the county from west to east, or, more accurately, it reaches the highest point of the group, 3555 feet high, Storr's Chain, between Patterdale, Parton, and Kirkby Stephen, which, from the head of the valley of the Eden, on the eastern side of the county: by which valley, here very narrow, it is separated from the Pennine Chain. It may indeed be considered as united at the head of the valley of the Eden, in Mallerstang Forest, whose part of the county is in Northumberland, and that of the Kent, the part of the county of Eastmoreland, or Kirkstone Fell and the valley of the Eden is divided into two parts by a depression through which the Lune passes. The principal mountains along the ridge are Grisdale Brow (1982 feet high) and Dow Craggs, between Helvellyn and Kirkstone Fell; High Street, 2551 feet, the highest point of Kentmere; Birkbeck Falls and Hause Hill, near the head of Borrowdale; Jeffery's Mount, on the west side of the depression through which the Lune flows; Langdale Falls, the head of the Langdale Valley; Great Langdale Fell, near the head of the Lune; and Wild-Boar Fell, in Mallerstang Forest, near the west side of the valley of the Eden. From each side of the ridge ramifications are thrown off, extending northward to the border of Cumberland, and southward to the border of Lancashire, or the shore of Morecambe Bay.

On the north side a principal branch is thrown off from the main ridge at High Street, a short distance east of Kirkstone Fell, of which branch Dodd Hill, Place Fell, Aldsray Pike, Kiddy Pike, the peaks in Martindale Forest, and Swareth Fell are summits. This branch extends nearly to the bank of the Eamont, a principal feeder of the Eden, opposite Penthall; and forms, with that part of the main ridge which is between Helvellyn and Kirkstone Fell, a somewhat precipitous ascent to Kirkstone Fell and High Street, a semicircle, having the upper part of the lake of Ullswater embosomed in its centre. This lake, the upper part of which belongs wholly to Westmoreland, with the lower part is on the border of Cumberland and Westmoreland, and is bounded, with an average breadth of half a mile. Hodgson's 'County Survey' however runs the boundary-line of the two counties upon the centre of the lake from Glencoa to Glencoin, the great head of Ullswater, at the boundary of Patterdale, into which open other dales or valleys, including Glencoen or Glencoin, Glenriddin, Grisdale, and Deepdale, which are formed by the short branches thrown off towards the lake by the semicircle of mountains which lie surrounded by Martindale above the northern end upon the south-east side of Ullswater; it lies between the hills of Martindale Forest on the east, and a detached mountain or hill on the west. These dales are watered by mountain streams flowing into Ullswater.
Then* the Green-Slate flows.

From the main ridge near Birbeck Fells an important branch is thrown off in a north-east direction; but between this and the branch ridge, which has been described as parting from the main ridge at High Street, are two shorter branches separated from the High Street branch by the valley of Mardale; from each other by the valley of Swithland, and from the valley of Great Langdale by the valleys of Little Langdale and the Little Lode, Drunken Gill, and Wet Sledscale. These three valleys are drained by three streams which unite to form the Lowther, a feeder of the Kentmont.

The westernmost, flowing through Mardale, expands into a wide vale, and from each of these valleys, from an eastern quarter to half a mile wide. The stream which waters Wet Sledscale is the most considerable of the three.

The branch from the principal ridge of the mountains at Birbeck Fells is known in the part nearest the ridge as the Great Fells. It extends northward in several ridges separated by intervening vales, Knife Scar, and the hillside of Shap Moor, Newby High Moor, Ravensworth and Meaburn Moors, and Colby Common, all belong to this branch.

The intervening vales have a general direction north and south, and are connected by the flow of a small stream which joins the Eden between Kirkby Thoresby and Temple Sowerby. Part of the hills which form this branch, including Oddendale Knab, Orton Scar, Asby Moor, Crudby Fell, Ash Fell, and Birk Fell, extend eastward in a direction parallel to the main ridge, from which they are separated by a valley watered by the Lune and its upper affluent.

The branches from the main ridge on the south side extend on the western side of the county into the county of Lancashire, and into the valley of the Ribble, and other small streams. All the branches are cut by the valleys draining the valley of Grasmere, by which they are separated from a detached group of the Cumbrian Mountains, which occupies the western extremity of the county. These branches and valleys extend Long Sleddale, and are separated from Grasmere and drained by streams which flow into the upper part of Windermere. A branch somewhat longer than those just described extends between Ambleside and the Troutbeck to the shores of Windermere. Another branch is more eastern, and joins the ridge northward in the valley of the Kent, being drained by the east Kentdale and the valley of the Kent, and on the west by Windermere and the valley of the Lune. Near the ridge the country is more not much breadth, and as it advances southward it becomes broader, and is subdivided by the valleys drained by the Whinter, the Witherslack brook, the Underbarrow, and other small streams, into parallel ranges of hills and valleys, called the Kentdale, Pooleyeshire, and Withbarrow Scar, Lyth Fell, and Underbarrow Scar in Westmoreland.

Other branches from the main ridge, subdivided, like that just mentioned, into parallel ranges of hills, spread over that part of the county which lies between the Kent and the Lune. Of these branches one part, including the hills of Sledscale Forest and Potter Fell, separates from the ridge near Harker Fell, and extends between the valley of Kentmere, watered by the upper course of the Kent, and the valley of the Lune, and is watered by the Sprey, a feeder of the Kent, southward to the junction of this feeder with its principal. Another part, of which Crow Brow and Tod Fell form part, extends southward on the east side of Long Sleddale, which it separates from another valley to the south, which are separated by the Great Fells, and which joins the Kent just above Kendal. Other parts of this branch, comprehending the heights of Whinfell Common and Lambright Park, Hay Fell, Rowland Edge, and, more to the southward, Haverbruck Fell, Arnsdale Fell, and Great Shap, extend southward between the Kent and the Lune into Lancashire; the parallel ranges of hills being separated by streams which join the Beelo, a feeder of the Kent. That part of the county which extends across the Lune westward is occupied by Middleton Fell, Barbon Fell, Barbon Beacon, Great Colm, Bowena, and Casterton Fell, all belonging to the group which separates Dentdale in Yorkshire from the lower part of Lonsdale, or the valley of the Lune, in Westmoreland and Lancashire.

The western extremity of the county is occupied by part of another group of the Cumbrian Mountains, separated from that part of the principal ridge which is between Helvellyn and Kirkstone Fell, by the valley of Grasmere; and from the Furness Fells of Lancashire by the valley of Little Langdale, and divided into two parts by the valley of Great Langdale.

Lancashire. Here they are watered by the Lune and Loughrigg Fells are between Grasmere and Great Langdale; and Bow Fell (2111 feet high), on the border of Westmoreland and Cumberland, and Wrynose, or Wrynee, form the western termination of the valleys of Great Langdale and Little Langdale unite in the tarn or group of Eter Water, which flows into the Loughrigg tarn, adjacent to the south foot of Loughrigg Fell, so forming the Brathay; the stream which waters Grasmere receives streams from two tarns in the upper part of the valley, expands in the lower part of the valley into two lakes of Grasmere and Rydal Water, and thence into the Windermere, forming the Rothay, which, with the Brathay just named, form the principal feeders of that lake.

Geologically the county may be regarded as consisting of three parts. The slate rocks of the Cumbrian Mountain division are separated by the great carboniferous and mountain limestone series of the North of England, of which formations the Pennine Chain forms the western outcrop, constitutes the second part or division; and the new red-sandstone of the valley of the Kent, the third.

If a line be drawn in a south-easterly direction from the foot of Uluzzlewath, passing a little to the south-west of Shap and Orton, and thence to Ravenstonedale, at that place bending to the south coast of the county, at a point where the road from Sedbergh to Kirkby Stephen enters it; and another line be drawn nearly at right angles to the former, commencing at Shap Wells, passing by the south side of Wansfell Crags, and crossing the valley of the Kent, the western part of the county of Kentmere near the Hall, and the valley of Troutbeck a little above Town Head, and thence, skirting the southern flank of Wansfell, to Pool Wyke, near the north-west angle of Windermere;—the whole county will be divided into three irregular and unconnected districts, each marked by peculiar geological features. We shall consider them in the following order:

1. The green-slate and porphyry of the north-western district.

2. The upper slates of the south-east.

3. The carboniferous rocks of the north-east, and the new red-sandstone of the basin of the Eden.

1. Green-Slate and Porphyry.—This, the middle term of the series into which the rocks of the county have been divided, and overlapping the lowest member of that series in the adjoining county (the Skiddaw Slate of Sedgwick) occupies the whole of the north-western portion of the county, and is bounded on the south by the range of a series of overlying beds of calcareous slates (Coulston limestone &c.), and on the north-east by the carboniferous rocks. It comprehends two distinct classes of rock, igneous and aqueous, yet so blended and intermixed that they must be considered as the effects of two distinct causes acting together and continuing during a lengthened geological period. The igneous rocks include almost every variety of felsite and felsinite-porphyry, occasionally pass into greenstone; they more rarely put on a columnar form like that of basalts, and occasionally resemble rocks of the hornblende or Main group. But these rocks are so cut up, and are so extensively at the state of commination, and obtain their typical colour from earthy chlorite derived from the Plutonic sills. All these rocks have, in a greater or less degree, a columnar structure, and from the finest rock-slates to the coarsest granite, and from the highest and most rugged peaks of the whole lake district, constituting the main ridge of the mountains west of High Street, to the intervening valleys of Grasmere and Great Langdale, &c. In the valley between Grasmere and Great Langdale, &c. and the tilt of the rocks is north-east, and they dip at a steep angle of the rocks is the southern end. Garnets are found in some abundance in these rocks, and they are so abundant in the brecciated rocks of this district that the lastly discovered in any part.

No organic remains have been discovered in any part of the group, the internal composition of the rocks. These rocks have been so frequent to permit the extraction of any organic remains from them.
life. Metallic veins occur in some places; amongst others, a lead-niue is worked south-west of Ulleswater.

2. The South-Eastern District.—This formation is divided by Professor Sedgwick (see "Proceedings of GeoL. Soc., Lon.," 1832) into three ill-defined groups: 1. the fossiliferous rocks south of Kendal and of Kirkby Moor; 2. a lower group, lying east of the scar in limestones and grits; but with a more decided slatey impress and fewer traces of fossils; 3. a complicated group of calcareous slates, alternating with hard coarse siliceous beds and several bands of fine roofing-slates, all resting on the fossiliferous rocks of Coniston. A recent survey of this district, also separates this division of the slate rocks into three groups (see "Proceedings of GeoL. Soc., Lon.," 1843), and seeks to identify them with the three principal groups of Mr. Murchison's Silurian System. Mr. Sharpe's division will involve a descending order of making a traverse from the south-east to the north-west; as, for instance, from Kirkby Lonsdale, where the uppermost beds underlie the old red-sandstone, to the Coniston limestone above Low Wood, at the head of Windermere, first, Upper Ludlow rocks, occupying the greater part of the district between the lower parts of the Kent and Lune, succeeded by a band of Lower Ludlow rocks; next, a series of unfossiliferous beds (of considerable thickness when expanded) underlies the district of Windermere rocks, and are the assumed equivalents of the Wenlock formation; and, lastly, a series of slates (Kirkby Ireleth, grey slaty grits, blue flagstones, and Coniston limestone—the last being the supposed equivalents of the Cardoc sandstone). The Coniston limestone forms a well-defined though irregular base to this division of the slates on the north-west (this boundary being rudely marked by the line we supposed to be drawn from Shap to Highmilestone, and thence to Ulleswater). On the south and south-east it is bounded by Morecambe Bay and the carboniferous rocks, and it extends eastward as far as the border of the county, except where overlaid by the carboniferous series of Yorkshire. Three banks are observable on the eastern side of the Lune, all of which are separated by the western bank of an enormous fault, which ranges in the direction of that river. Middleton and the other Fells on the eastern side of the Lune are composed of the beds of the middle group of this division. The exact age of this upper division of the slates can only be ascertained by an appeal to the organic remains, which are sufficiently abundant in the first and uppermost, and in the third or lower terms of the series. The rocks to the east of Kendal and those which break through the western Carboniferous limestone of Underbarrow Scar abound with Upper Silurian fossils, and the Coniston limestone is charged with Lower Silurian crustacean shells and corals. The middle term is fortunately without organic remains and is in the absence of the other bank. (Aynsley and Wenlock limestones). Professor Sedgwick's recommendation to separate the whole upper division of the slates of Westmorland into two groups, an upper and a lower, seems to be at the safest plan. These uppermost slates are harder than those of the lowest series and, give to the mountains formed of them a more angular and picturesque outline and rugged surface; but they do not in these respects equal the middle series of slate rocks, which form mountains of greater elevation. The more piquant mountains formed by the uppermost slates rarely have a height of 1000 feet, being inferior not only to the middle slate mountains (Helvellyn, Langdale Pikes, etc.), but also to the limestone mountains of the Pennine Chain. Among the Slates of the south-western summits there are several parallel line of greenstone. This small slate and greenstone district is distinguished by three lofty conical summits or 'pikes': Knock Pike, the most northerly, is chiefly composed of greenstone; Dufton Pike, which, near to, and contains both greenstone and slate, and Miron Pike, the south-westernmost, appears to be almost entirely composed of slate. The line of junction and order of superposition of the greenstone slate, if they have any order, have not been determined. Streaks of greenstone are found on Langdon Moor, near Merton Pike, and at Middle Rigg; and slate rocks are obtained in several places. Granite rocks are found in this district, and a species of granite used for fencen is quarried near Dunton Pike. Shattered and confused portions of the coal-measures and of the mountain slates are observed to be of the greenstone on the west for about three miles between Melford and Kirkland. The coal-seams, which are very thin, are often quite vertical, and the coal has been extracted by sinking perpendicularly with a few horizontal characteristics from the mine; without any clue to lead to their recovery, the coal is now seldom worked.

The millstone-grit is seen only on the eastern border of the county, covering the mountain limestone and forming the bed of Dunton Fell, which is composed of a fine uniform limestone. The limestone beds are seen in two parallel lines of greenstone. The beds are thick at the eastern end and thin near the middle of the Cumbrian Mountains. These coal-pits are found at the junction of millstone-grit between Appleby and Shap there are several coal-pits. This small coalfield is covered by a national dyke. There are some coal-pits at Holbeck near Brathay. On the southern side of the county the carboniferous limestone appears broken up by enormous faults into detached portions with wide valleys between them; one large mass, with several outliers, commences about two
miles north of Kendal, and extend as far south as the shores of Morecambe Bay, resting on the Silurian rocks, which underliemost of the land. Here and there the old red-sandstone (Plumgarths, Lonsdale, Birkbeck, Slate Hill) makes its long south-western escarpment of Underbarrow Scar is another mass of limestone (Whitbarrow). The limestone at Kendal is extensively quarried for building purposes, and much of the material obtained from it is shipped eastwards, to the east of the town being much in demand for ornamental purposes. Another mass of limestone of some extent lies to the south-west of Kirkby Lonsdale.

The new red-sandstone is the most recent formation of the Cumbrian Mountains, it fills all the lower part of the Eden, from near Brough to the shores of the Solway Firth. It usually appears here as a strong thick-bedded sandstone, and is much used as a building-stone. It rests upon the carboniferous rocks on its south-western side, and, spreading wide on both sides of the Eden, abuts against the upraised terrace of Cross Fell elevated by the great Pennine fault. Immense masses of magnesian conglomerate may be seen at the bed of the Eden near Kirkby Stephen, containing water-worn and unabraded fragments of the mountain limestone and coal-measures; the gypsum is obtained in many parts of the saliferous district in Westmorland.

Proofs of igneous action are abundant in many parts of this county; porphyritic dykes being found in various parts; the sandstone itself is not very distant from the 'Shap Granite' in Wet Sleddale, in the valley above High Barrow Bridge, on the crest of the hill from that place to Shap, and in two places farther north and near the road-side. But the well-known Shap Fell red sandstone, which runs for several miles long the length of the hill on the rock in the county. It rises at the base of the upper division of the slates, and appears to have cut off the Coniston limestone for some distance; altering, tilting off at high angles, and indurating all the neighbouring rocks. The boulder-clay at this granite and the Kampermuck may be found to have travelled in one direction as far as the Yorkshire coast. They are seen resting at the height of several hundred feet above the level of the plain of Eden, against the steep sides of the great ridge of Cross Fell, and they bear witness to the sudden elevation of that range.

The mode of their transport, whether by water, or by ice, or by ice floating in water, is yet an unsolved problem in geological dynamics.

Hydrography and Communications. — The Pennine chain of mountains separates the watersheds which flow into the Irish Sea from those which flow into the German Ocean. Westmorland is chiefly on the western side of the chain; but a small portion is on the eastern side of the ridge, and in some parts of the upper waters of the Tees has a direct outlet to the sea. The Tees divides the northern boundary of Cross Fell, but its course as far as the fall at Cauldron Snout is on the border of Westmorland. Near the mouth of the Tees in the north-eastern part of the county, and having its course within or upon the Eden. The sources of the Lune or Lune (which must not be confounded with the Lune described below), the Bauder or Baulder, the Greta, and its affluent the Barney, all belonging to the system of the Tees, are within or upon the border of Westmorland. The Swale, which belongs to the system of the Ouse, has also its source on the border. But all these streams, which belong to the eastern slope of the Pennine Chain, have scarcely anything in common with the streams of Westmorland, that chain which determines the watershed lies very near if not close upon the eastern border of the county. Of the Tees about eight or ten miles belong to this county; the length of the Maise, which belongs wholly to it, is about the same. Of the Lune the whole of the county belongs to it; but of the other rivers scarcely more than a mile or two.

On the western side of the Pennine Chain the county is divided by the principal tributaries of the Cumbrian chain into two basins: the basin of the Eden on the north, and the basin of Morecambe Bay on the south, drained by theKent, the Lune, and other streams, which flow into that estuary. The Eden rises on the border of Westmorland and Yorkshire, on the side of Hugh's Seat, one of the mountain tops of the Pennine Chain. Its course for the first two miles is southward; then it abruptly turns to the north, and flows northward through four miles through a narrow valley en-closed between the Pennine and Cumbrian Mountains past Kirkby Stephen to about a mile from the village of Souley, where it receives on the left bank a stream eight miles long, which rises in the Cumbrian Chain near Dun Fell, and has a course of seven miles west-south-west along the border of Westmorland and Cumberland into the Eden, which it joins on the right. From the junction of the Crowndundale the Eden flows two miles more north-west, along the border of the county to the junction of the Emmont on the left bank, after which it quits Westmoreland altogether. Its course in this county is 30 miles; in Cumberland about the same; making a total of nearly 60 miles. No part of its course in Westmoreland is navigable.

Below the stream which joins it at Souley, the Eden receives several other affluents. Those which join it on the right bank are the Beech or Belay, seven or eight miles long, which wavers St. formed by Stanemore Dale; the Hillbeck, a stream six miles long, which passes the town of Brough; the Troutbeck, ten miles long, which rises near Scordale head; and the Crowndundale, already noticed: all these rise in the Pennine Chain. On the left bank of the Eden is joined by the stream which falls from Ashby; a stream seven miles long from Great Ashby; by a third stream, the Leech, eleven miles long, from the neighbourhood of Shap (which last receives the Lyvennet, the Troutbeck, and the Crowndundale), and the Emmont, from Uleswater, on the border of the county.

The Coldell or Hartop beck, which rises in the Cumbrian ridge at the foot of Kirkstone, may be regarded as the true source of the Emmont: it flows into Uleswater at its upper end, and passes by the same fell in Mallerstang, to the lower end: the course of the Emmont is north-east along the border of Cumberland and Westmorland: its total length from the source of the Coldell, including Uleswater, which is an expansion of it, is about 20 to 22 miles. About four miles below its source it joins the river Eden. The Lotherside, formed by the junction of three becks or streams, which respectively water Wet Sleddale, Swindale, and Mardale: the length of the Lowther from the head of the Wet Sleddale beck, the longest of the three, is more than 16 miles, which wavers St. formed by Uldale Dale; the Mardale beck. All the larger affluents of the Eden which join it on the left bank rise on the northern slope of the Cumbrian ridge.

The Lune, the Kent, the Winster, and the Leven drain the basin of Morecambe Bay. The Lune rises on the northern side of the Cumbrian ridge near the head of the stream, which joins the Eden at Souley. Its course is northward for two miles, then westward for six miles through the plain of Eden near Kirkby Lonsdale, turns south and the eastward prolongation of the branch thrown off from the main ridge at Birkbeck and Shap Fells on the north. The affluents of the Lune in this part are all small. A little south of Orton the river turns south, and flows 19 miles southwards partly in the county, partly on the border, to Kirkby Lonsdale, a little below which it quits the county to enter Lancashire. No part of its course of 27 miles in Westmorland is navigable. Its tributary the Rither or Roatha rises in Westmorland, then turns to the north and joins the river at its source on the border of Yorkshire and Westmorland.

The Kent rises at the foot of High Street in the Cumbrian ridge, and flows south by east about 10 miles through the valley of Kentdale to the junction of the Sprint Burn at Burneside, a stream of nearly equal length which rises in the same ridge east of the Kent and drains the valley of Long Sleddale. This river joins the Kent on the left bank; and about a mile lower down the Kent receives on the right bank the foot of the river Mint, which is 60 miles long, which drains the valleys of Bannisdale and Whinfell. From the junction of the Mint, the Kent flows 12 miles southward by the town of Kendal into Morecambe Bay. Its whole course of 23 miles belongs to the county, and it is navigable to the head of its estuary. There is no navigable reach on the right bank the Pool, formed by the junction of the Underbarrow and another stream; and on the left the Beet, or...
parallel to the Kent, and joins that river by a sudden bend to the west near Beatham. The length of the Pool with the Underbarrow is about 9 miles; of the Beelo 14 miles.

The Winter, also called the Pool, rises in Westmoreland, and flows some 10 miles, along the broad valley of Furness in Lancaster into Morecambe Bay. The Leven, which flows out of Windermere, belongs to Lancashire; but the Rothay or Raisebeck, which drains the valley of Grasmere, the streams which drain the valleys of Great Langdale, Little Langdale, and the Troutbeck, which all flow into Windermere, and may be regarded as the upper waters of the Leven, belong to Westmoreland. Eaterwater, Grasmere, Rydal Water, and some other small lakes or tarns, are connected with the streams which flow into Windermere. Ullswater and Haweswater have been given in speaking of the mountains, and the position of others has been noticed. Though Windermere has been described under Lancashire as situated in the county, yet in Hodgson's 'County Survey' it is included in Westmoreland; and the Court Rolls at Lowther Castle describe the fisheries (which comprise all the lake) as held under the barony of Kendal by the payment of certain lord's rents, and they are also rated in that county. For economical or commercial purposes the rivers and lakes of Westmoreland are of little importance; but in combination with the rugged mountains and the secluded valleys amid which they are found, they give to the county a high degree of beauty. The first impression of the lakes, says Wordsworth, in his 'Scenery of the Lakes,' is endlessly diversified, sweeping easily or boldly in simple majesty, abrupt and precipitous, or soft and elegant. In magnitude and grandeur they are individually inferior to the lakes in the west of England; with some exceptions parts of this island; but in the combinations which they make, towering above each other, or lifting themselves in ridges like the waves of a tumultuous sea, and in the beauty and variety of their outlines, they are unsurpassed by any.

The mountains are generally covered with turf, rendered rich and green by the moisture of the climate; forming in some places an unbroken extent of pasture, in others laid partially bare by torrents and burnings of water from the mountains in heavy rain. Windermere, is not the only lake, want of timber-trees is particularly felt, but coppices are tolerably numerous. The trees are chiefly oak, ash, birch, and a few elms, with underwood of hazel, holly, and white and black thorns. Scotch fir, beeches, larches, and limes have been introduced. Cultivation, by means of terraces, is constantly found on the mountains; heath and furze are found only in places.

The valleys are for the most part winding, and in many they are abrupt and intricate; the bottom of the valleys is for the most part flat and level, in places spacious gently declining area, level as the surface of a lake except where broken by rocks and hills that rise up like so many islands from the plain.

These lakes, as compared with those of Switzerland and even of Scotland, is favourable to the production of variegated landscapes, and their boundary-lines are either gracefully or boldly indented: in some parts rugged steeps, admitting of no cultivation, descend into the water; in others, gently sloping lawns and rich woods, or flat and fertile meadows stretch between the margin of the lake and the mountains. The margin of the lakes is generally lined either with a fine bushy gravel thrown up by the water, or with patches of reeds and bulrushes, while the surface of the plain, the low plain, the wide and extensive plain, the Loughrigg Tarn, near the junction of the valleys of Great and Little Langdale, is one of the most beautiful. The mountain tarns are difficult of access, and naked, desolate, and gloomy, yet impressive from these very characteristics.

The streams of Westmoreland are rather large brooks than rivers, with very limpid water, allowing their rocky or gravelly beds to be seen to a great depth. The number of torrents and smaller brooks, with their waterfalls and waterbreaks or rapids, is very great. The wide estuary of the Kent presents at low-water a vast expanse of sand, with a shallow bed of mussels, oysters, and fish, as trout, eel, bass, perch, tench, roach, pike, char, and others. Sea-fish are also abundant on the shore of Morecambe Bay.

The principal coach-roads in the county are the mail-roads from Lancaster (to which the mails are sent from London by railway), to Carlisle and Glasgow; and the road (formerly a mail-road) through Stamford, Newark, Doncaster, and Greta Bridge, to Carlisle and Glasgow. The Carlisle mail-road enters the county on the south-west, and Kwente near Ulleswater; and runs north-west by Kendal, Shap, and Brougham, to Penrith; before reaching the last-mentioned town it crosses the Eskmont into Cumberland. The road by Newark and Greta Bridge to Carlisle enters the county on the eastern side near the head of the Greta and of the Beeth, and runs north-westward by Brough, and Bondgate, a suburb of Appleby, to Brougham, where it joins the road just described. There is a second road from Lancaster to Kendal, through Milnthorpe, crossing the Kent, in a line interesting to picturesque lovers from Kendal south-westward to Ulverstone and Dalton-in-Furness; westward to Bowness and across Windermere by the ferry to Haweswater, and Coniston-Water in Furness, and to Egremont and Whitehaven in Cumberland; north-westward by Keswick and Newlands to Keswick, and south-eastward by Kirkby Lonsdale to Settle, Skipton, Otley, and Leeds.

Westmoreland has no railways, and only one canal, the Lancaster Canal, the first act for which was obtained in 1762. This canal, commenced at Lancaster, at a height of 144 feet above the level of the sea, and runs southward with some bends by Burton in Kendal to Lancaster and Preston in Lancashire. Near Burton in Kendal it has a descent of 94 feet by eight locks. The canal passes through a tunnel 310 yards long. There is a canal 5 or 6 miles south of Kendal, and is carried by an aqueduct bridge over the Beelo near Milnthorpe. About twelve miles of the canal are in Westmoreland.

Agriculture—Although this county, from its mountainous nature, is less interesting ecologically than in an agricultural point of view, it contains some very fertile valleys, in which there are as many well-cultivated farms. The climate is mild and moist in the valleys: the high hills condense the clouds which come over the Atlantic, and cause them to fall in abundant quantities on the mountains, which are green, but are not so favourable to the ripening of the corn. Much snow often accumulates in winter. The greater part of the surface of this county, which is reckoned to contain 475,000 acres, is divided into small meadows, pastures or for plantations of timber-trees. Dr. Watson, late bishop of Llandaff, who was a native of this county, took much interest in the increase of woods, and made many calculations on the profits of planting, which appeared to offer great advantages to those who would engage in this speculation, and he showed a good example by making extensive plantations on the sides of barren hills which he had purchased.

The soil in the valleys is mostly a dry gravelly mould, composed of stones, ashes. The waters are washed down from the hills, and forming a soil well fitted for the cultivation of turnips, of which great crops are raised on some well-managed farms. Towards the east and north of the county the soil is more improved to the extent of the areas of the fields, the land is too wet, in spring and autumn, to admit of clean and careful cultivation. Wherever the water has no sufficient outlet, basins of peat are formed; but these are not so extensive as they are in many other hilly counties. These small circular basins, which are the summit of a great part of the hills, and which, being porous, prevent the accumulation of water, except in those parts where they form the lakes which make this county so interesting to travellers.

There was formerly a great many small proprietors in Westmoreland who were called Statemen, that is, Estatesmen—men who held land of their own, either to
freehold, or by a customary tenure, somewhat resembling copyhold, under some great landlord. With the exception of a fine or heriot on the death of a tenant or on alienation, they were held free. The proprietors of these very small farms were an independent set of men, who worked hard and lived frugally. They understood the trade of weaving, and were a good farmer in his wish to improve the cultivation. It is to be hoped that more liberal views may yet be taken by the present agents and proprietors, and a greater scope given to improvements. Draining the heavy lands has been the chief object of attention; and in no county is it more beneficial than in this, where the rains are so abundant, that the evaporation from the surface of the soil can never keep it in a dry state, if the subsoil is retentive of moisture.

The principles of husbandry were originally very simple and not of the most improved forms, but increased communication by means of good roads, and the influx of visitors attracted by the beauty of the scenery, have contributed much to introduce every improvement on those farming lands and on the heath and moors. The land is occupied by tenants who have sufficient capital. These however are not so numerous as it were to be desired for the improvement of the farms. A considerable portion of every farm is generally worked by the owner, who wishes, and is fit for milk cows, moderate on the slope of the hills, and only on the mountains: some rough cattle are reared and many mountain sheep feed on the hills. These often suffer much from the severity of the winter; but as they cost little to keep, they are not much attended to; and in no county is it more beneficial than in this, where the rains are so abundant, that the evaporation from the surface of the soil can never keep it in a dry state.

The old system of cultivation was very simple: when the pastures became mossy, owing to the wetness of the climate, they were ploughed up; one or two crops of oats were raised, and the land remained in grass. Oats and barley, then oats again, when the land was left to run to grass, which it did in about three years. It remained in pasture for five or six years longer, when it became mossy again, and was again broken up and ploughed as before. In every farm there are many a small mound, and the common land is fenced off, but by the introduction of turnips and clover in the rotation the land has been made to produce a much greater return, while it has been gradually improved; and by sowing good grass-seeds the produce has been much increased in quality, while the herbage is more free from natural weeds.

From Kirkby Stephen to Brough and Appleby and thence to Temple Sowerby the soil is a deep sand, which in a dry country would be very unproductive; but which the moisture of the climate renders most productive in the compact on cultivation. Turnips and potatoes grow well here, when plenty of manure is put on. Lime is a great improver of this soil, and fortunately abounds in the county. Near Kendal a great breadth of potatoes is planted for the supply not only of the immediate neighbourhood, but also of the adjacent counties, and of thousands of acres being annually sent into Lancashire and Yorkshire.

The heavy lands were generally cultivated on the old system of wearing; the crops were grown on and some of the manure raised from the pastures, and before improved rotations were introduced after draining and deep ploughing, was perhaps the most profitable course. The cultivation of heavy wet lands is so much more precarious than that of arable that a little improvement has been greatly attended on the improvement as the light turnips soils. Of late these lands have been found susceptible of a great improvement, by thorough draining; the crops are found not only more abundant, but also more certain; and the inconvenience of not being able to plough and work these soils in spring is obviated by the perfect draining. When this system is more generally adopted on heavy soils, it will be found that the present disinclination of farmers to take farms on such soils will cease, and give place to the more salutary predilection for heavy lands, which will bear wheat and beans with little exhaustion.

The cultivation of flax and hemp, which was very common formerly, has now been long discontinued, owing to the competition of the foreign growers: but if ever the present protection given to the growers of corn be removed by an alteration in the corn laws, the comparatively unprotected produce, such as flax and hemp and linseed, will no doubt draw the attention of the farmers again.

Grass-land being abundant and the climate favourable to pastures, a great deal of the land is kept in grass and the maintenance of cattle. Good meadows let at a high rent, and are carefully manured with composts. Great crops of hay are made in favourable years, and, as those who keep many horses, and generally live by the hay of, it is seldom sold in the dry state. Young cattle are kept on the inferior lands in summer, and have hay and straw in winter, with turnips where these are raised: a few are fattet at three years old, but most of them are sold as graziers in Yorkshire and Lancashire. Scotch cattle are the value in September, at the great fair at Brough-hill, held in that month: they are wintered in coarse pastures and occasionally in straw-yards; the next year they are put on the best grass and are fit for the butcher in October. A few horses are kept in the same mode, but not to any considerable number, and are fit for the mountain-pastures; they are brought down to the valleys at the approach of winter and kept in the enclosed grounds till April. The folding of sheep on turnips is not so general as it ought to be, especially on the gravely and sandy soils of the county. There are many fairs, which are to be judged of by the extent of land on which turnips are raised to be eaten on the land by sheep. The plantations are extensive in most parts of the county.

The bishop of Carlisle has already been mentioned, made considerable plantations of oak, ash, elm, beech, sycamore, Scotch fir, and larch, which last have thriven best. Many ornamented cottages and small villas have been built on the borders of the several lakes; and men of talent and reputation have taken up their residence in the district, and increased the value and beauty of the county. There has tended to improve the immediate neighbourhood more rapidly than would otherwise have been the case. Yet this improvement seldom extends far from the centre where it commenced; and many districts, which were cultivated by their own inhabitants, remain uncultivated, and present to the view of the traveller cultivated fields. If something should be lost in picturesque scenery, much might be gained in usefulness; and the intermixture of uncultivated farms and barren rocks would not render the scene less interesting.

The fattening of hogs and the curing of bacon and hams are well understood in Westmoreland, and many hams are sent to other parts of the country. The breed is not large. The hogs are not made to follow the plows in some places, the hams are more delicate, and are very well cured and smoked. They are often sold as York hams, whereas the latter are much larger and fatter, the Yorkshire breed of hogs being large and fattening very readily. Although the curing of hams is tolerably well understood in most places, it may be greatly raised by a judicious outlay of capital, either by planting or by cultivation. Draining can be effected at a small expense, where stone is so abundant: lime is cheap, and labour reasonable: with these provisions the country is in a good position to present to the view of the traveller cultivated fields. If something should be lost in picturesque scenery, much might be gained in usefulness; and the intermixture of uncultivated farms and barren rocks would not render the scene less interesting.
The parish of Kendal, which extends into Lonsdale ward, has an area of 68,360 acres, and is divided into twenty-seven townships of parishes, each separate, maintaining its own poor; the population of the whole parish in 1817 was 17,564. The parliamentary borough comprehends the two townships of Kirkby Kendal and Kirkland, and such parts of the township of Nether Graveshop as are adjacent to the township of Kendal. The statistics of the three townships in 1817 were as follows:

- **Kirkby Kendal:**
  - Area: 2,110 acres
  - Population: 5,328
- **Kirkland:**
  - Area: 2,200 acres
  - Population: 1,160
- **Nether Graveshop:**
  - Area: 1,850 acres
  - Population: 312

This statement does not exactly give the statistics of the parliamentary borough, since it includes a portion of the township of Nether Graveshop which is not comprehended in the borough, and which indeed, naturally, has no municipal distinguishing. The difference however is not of great importance.

The town is chiefly on the slope of a hill rising from the right or western bank of the river Kent; one principal street runs to the northward from the church; two others are divided at the town end in five divisions, and are divided into four wards, which, with their areas, relative position, and population in 1831, are as follows:

<table>
<thead>
<tr>
<th>Name of Ward</th>
<th>Position</th>
<th>Area in Acres</th>
<th>Population in 1831</th>
</tr>
</thead>
<tbody>
<tr>
<td>East ward</td>
<td>N.E.</td>
<td>182,680</td>
<td>45,345</td>
</tr>
<tr>
<td>Kendal ward</td>
<td>S.W.</td>
<td>147,440</td>
<td>27,252</td>
</tr>
<tr>
<td>West ward</td>
<td>N.W.</td>
<td>118,120</td>
<td>7,894</td>
</tr>
</tbody>
</table>

The town of Kendal is included in Kendal ward; the other wards are in the market-town of Kendal, and the market-town of Kendal, Kirkby Kendal, Kirkby Stephen, Milnthorpe, Onod, and Shap. Appleby is described elsewhere. [APPLEY.]

Kendal, more accurately Kirkby Kendal, or Kirkby in Kendal, the town, and the church is on the site of the old or the new, and is in Kendal ward, 263 miles from the General Post-Office, London, viz. 241 miles by railway to Lancaster, and thence by coach 22 miles. It was made a market-town by licence from Richard I., and became, by the settlement of the Farnings, in the reign of Edward III., the seat of a considerable manufacture of woollen cloths (which took from the town the name of Kendale), and continued to be so down to quite modern times: indeed the woolen manufacture is not quite extinct even now. The town was incorporated in 1678 by Queen Elizabeth. Before the turnpike-road was made in 1752, nearly two hundred pack-horses were employed weekly, some of them making two journeys in the week, in bringing provisions and divers articles from the town, or manufactories; besides two waggons twice a week from Lancaster, carrying in all about sixty horse-loads, and two or three carts making several journeys, and carrying altogether about forty horse-loads weekly between Kendal and Millthorpe. The parish of Kendal, which extends into Lonsdale ward, has an area of 68,360 acres, and is divided into twenty-seven townships of parishes, each separate, maintaining its own poor; the population of the whole parish in 1817 was 17,564. The parliamentary borough comprehends the two townships of Kirkby Kendal and Kirkland, and such parts of the township of Nether Graveshop as are adjacent to the township of Kendal. The statistics of the three townships in 1817 were as follows:

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<td>2,110</td>
<td>5,328</td>
</tr>
<tr>
<td>Kendal ward</td>
<td>S.W.</td>
<td>2,200</td>
<td>1,160</td>
</tr>
<tr>
<td>West ward</td>
<td>N.W.</td>
<td>1,850</td>
<td>312</td>
</tr>
</tbody>
</table>
The living of Kendal is a vicarage of the clear yearly value of 300l., with a glebe-house; the vicar presents to the perpetual curacy of St. George, which is of the clear yearly value of 200l. Thirteen of the townships in the outport of the parish constitute distinct chapels, and there is another chapel (Burneside) in the parish: with two exception, the following gives the number of persons authorized to serve the several curacies in these chapels. The parish is in the rural deanery of Kendal, in the archdeaconry of Richmond, in the diocese of Chester.

There were, in 1833, in the three townships composing the borough, an infant-school with 90 children; three dame-schools, or other schools for children quite young, with 66 children of both sexes; thirty-five other day-schools, with 1212 scholars, namely, 286 boys, 330 girls, and 557 children of sex not distinguished in the return; giving a total of 151 children, or between one in eight and one in nine of the population, under daily instruction. There were besides 12 persons under instruction in the evening. One of the day-schools, with 12 boys, was a free grammar-school; two others, with 67 boys, were ragged Schools. Cauden notices that there were five in the county; and another by endowment subscription; and two others, with 145 boys and 172 girls, were national schools, partly supported by endowment and subscription, and were Sunday-schools also. There were, besides these, nine Sunday-schools, with 738 children; making a total of 1114 children, or less than one in ten of the population, under instruction on Sundays.

In the outskirts of the town were twenty-four day-schools of all kinds, with from 725 to 735 children, namely, 277 boys and 458 girls; and 203 boys and 238 girls, in the returns; with 151 boys and 151 girls, in the returns; giving nearly one in eight of the population, under daily instruction; there were also eight Sunday-schools, with 442 scholars, namely, 224 boys, 173 girls, and 45 of sex not distinguished in the returns; giving about one in thirteen or fourteen under instruction on Sunday.

The Easter, Michaelmas, and (by adjournment) the Epiphany sessions for the county are held at Kendal, and the town is one of the polling-stations for the county. It is the seat of the Kirkby family, which is partly in Windermere, but chiefly in Grassmere parish, both in Kendal ward, 14 miles north-west of Kendal, and 277 from the General Post-Office, London, by railway to Lancaster and thence by coach through Kendal. Cauden notices that there were five in the county; and another by endowment subscription; and two others, with 145 boys and 172 girls, were national schools, partly supported by endowment and subscription, and were Sunday-schools also. There were, besides these, nine Sunday-schools, with 738 children; making a total of 1114 children, or less than one in ten of the population, under instruction on Sundays.

The living of Kendal is a vicarage of the clear yearly value of 300l., with a glebe-house; the vicar presents to the perpetual curacy of St. George, which is of the clear yearly value of 200l. Thirteen of the townships in the outport of the parish constitute distinct chapels, and there is another chapel (Burneside) in the parish: with two exception, the following gives the number of persons authorized to serve the several curacies in these chapels. The parish is in the rural deanery of Kendal, in the archdeaconry of Richmond, in the diocese of Chester.

Brough, or Burgh-under-Stainmoor, is in the East ward, 252 miles from the General Post-Office, London, by ex-mail road to Carlisle and Glasgow, or 28 miles north-east of Kendal, and 291 from London by railway to Lancaster and thence through Kendal. Many Roman coins have been dug up, and some antiquaries have identified the place with the Roman station Verternum by Minus. The town had antiently a castle, which was, together with the town, taken and sacked by King William of Scotland in A.D. 1174. The castle was ruined by an accidental fire A.D. 1521, but was repaired by Anne, countess dowager of Brough and Holme, in 1600. Its remains stand on an eminence, in the midst of what is supposed to have been the Roman station. The chief part still standing are some portions of the keep and some other towers: the keep is, in its general form and appearance, similar to those of Richmond Castle, &c. The whole parish has an area of 22,650 acres, and had, in 1831, a population of 1882, besides those contained in Kaber township, which was partly in Kirkby Stephen. The town is in the right hand return, had, in 1831, 191 houses, namely, 181 inhabited, 8 uninhabited, and 2 building, with a population of 212 families, or 966 persons. The town is divided by the Mersey, a small stream, into a north and south portion, and the two villages are respectively designated Market Brough and Church Brough, the former on the north, the latter on the south side of the stream: the houses are plain, but tolerably commodious. The church is large, but of poor architecture, and stands on the remains of a charred emblazoned wall, and in the windows is some ancient stained glass. There are meeting-houses for Methodists and Independents. The market is on Thursday, but is of little importance. There are two great cattle-markets yearly, and a weekly fair on Saturday. The Brough-hill Fair, is held on a common two miles from the town, near the Appleby road, and is a great fair for cattle, horses, wearing apparel, and hardware. There are small-paths and small-stalls; the market is composed of 63 men in 1831. The living is a vicarage, of the clear yearly value of 492l., with a glebe-house, in the rural deanery of Westmoreland, in the archdeaconry and diocese of Carlisle. There is a chapel at Stainmoor in the parish, the perpetual curacy of which is of the clear yearly value of 113l. There were in the whole parish, in 1833, nine day-schools of all kinds, with 302 scholars, namely, 115 boys, 62 girls, and 125 children of sex not stated in the return; giving nearly one in six of the population. On Stainmoor there was also a Sunday-school, and there were four other Sunday-schools: the whole contained 193 scholars, namely, 25 boys, 30 girls, and 138 children of sex not stated; giving rather more than one in ten of the population under instruction on Sunday.

Burton in Kendal is in Lonsdale ward, in the southern part of the county, near the border of Lancashire, 202 miles from the General Post-Office, London, chiefly by railway, on the road from Lancaster to Kendal, about 11 miles from each of those towns. The parish has an area of 9170 acres, and extends into Kendal ward, and into the hundred of South Lonsdale in Lancashire: the population, in 1831, was 1831. The township of Burton in Kendal, in which the town stands, had, in 1831, 107 houses, namely, 152 inhabited, 14 uninhabited, and 1 building, with a population of 136 families, or 733 persons. The town is well built, and has a respectable appearance, although many of the houses are old; there is a good market-place, with a stone archway in the centre of the church; and the church is in a good state of repair, with a square tower: there is a meeting-house for Independents. There are some manufactures of linen and canvas in the parish, which employed, in 1831, 44 men in the township of Holme. There were, in the parish, in 1831, 125 children of sex not stated in the return; giving nearly one in five of the population. The living is a vicarage, of the clear yearly value of 191l., with a glebe-house, in the rural deanery of Burton, in the archdeaconry of Richmond, in the diocese of Chester. The perpetual curacy of the chapel of Pres-
The inhabitants of the parish are divided into two main groups: 1. The village itself, consisting of a large number of cottages and small houses, most of which are inhabited by farmers and their families. 2. The surrounding countryside, which is dominated by agriculture and forestry.

The village is situated on a hill overlooking the River Lune, which flows to the south. The parish includes a large area of arable land, with a smaller proportion of woodland. There are several small streams and rivers, including the Millthorpe Burn and the Kirkby Burn, which provide water for irrigation and fishing.

The church, St. Michael's, is a large and imposing building, with a tall spire and a number of stained glass windows. It is a fine example of the Perpendicular style of architecture, with detailed carvings and sculptural work. The churchyard contains the graves of many notable figures from the community, including local landlords and landowners.

There are several schools in the parish, including a grammar school and a number of primary schools. The parish has a good standard of education, with high levels of literacy and numeracy. The schools are well-equipped with modern facilities, including computers and interactive whiteboards.

The church is also active in the community, with a strong tradition of voluntary work and charitable giving. There are numerous clubs and societies, including a local history society, a gardening club, and a women's institute.

In conclusion, Kirkby Lonsdale is a peaceful and serene village, with a rich history and a vibrant community. It is a place where people can live and thrive, with access to good education, healthcare, and amenities. The parish is well-served by its infrastructure, with well-maintained roads and pathways, and a good public transport network.
West

Lancaster; and 18 miles north by west of Kendal. There was antiently in this parish a Premonstratensian abbey, founded originally at Preston in Kendal (now Preston Patrick, a township in the parish of Burton in Kendal) by Thomas, son of Gospatrick or Cospatrick, not in the reign of Henry I., as stated by Nicholson and Burn, but in the reign of Henry II. This abbey was situated near the small river Duddel. The present abbey is that which was formerly the abbot's house, and is situated on the banks of the river Eden. The present abbey was, in all probability, built by the canons of the abbey. The church was not a collegiate church; it was a priory, and the абобы were only the lessees of the property of the abbey. The present abbey is a small, one-story building, with a gabled roof, and contains only one room, the chapel of the abbey. The abbey was an important centre of learning and culture in the region, and was attended by scholars from all over Europe. The abbey was dissolved in 1540, and its property was given to the Crown. The abbey was later sold to the Duke of Lancaster, and in 1571 it was granted to the see of York. The abbey is now a ruin, but its foundations can still be seen. The parish, including part of the chapelry of Mardale, has an area of 27,770 acres. There were, in 1836, 198 houses, namely, 190 inhabited and 8 uninhabited, with 948 persons, of these, 8 houses (6 inhabited and 2 uninhabited), 6 families, and 23 persons were in the chapelry of Mardale; but we have no means of ascertaining what proportion of the remainder belonged to the town and its immediate neighbour-hood; two-thirds of the population of the town, as is commonly the case, are agricultural. The town consists of one long street, extending along the mail-road from Lancaster to Kendal to Carlisle and Glasgow. The church is on the east side of the town, and retains some ancient parts amid many alterations. There is a prison at the town; and the prison of Lancaster, which is small, is held on Monday; and there is one yearly fair for cattle and pedlery; there are some limestone and slate quarries. The living is a vicarage, and consists of the whole value of 7½, with a glebe-house, and vicarates in the presents to the rectories of Blundells and Kirkby Lonsdale. There are in the parish, in 1833, three day-schools, with 62 scholars, namely, 13 boys, 7 girls, and 38 children of sex not stated in the returns; giving only 1 in 18 of the population under daily instruction. There were no Sunday-schools.

Divisions for Ecclesiastical, Legal, and Parliamentary Purposes.—The county is divided between the dioceses of Carlisle and Chester; the Eastern and Western, constituting the ancient barony of Westmoreland, form the rural deanery of Westmoreland, in the archdeaconry and diocese of Carlisle: Kendal and Lonsdale wards are included in the rural deanery of Kendal, in that part of the archdeaconry of Kendal, with the exception of Kirkby Lonsdale parish and its dependent chapels, which are included in the rural deanery of Kirkby Lonsdale, in the same archdeaconry and diocese. Both the rural deaneries of Kendal and Kirkby Lonsdale consist of several parishes in the county of Lancashire. The number of parishes in the county is comparatively small, being only thirty-two; but as many of the parishes, from their great extent, which averages more than 15,000 acres, or nearly 24 square miles each, and rises in some instances (Kirkby Stephen and Kirkby Lonsdale) to above 30,000 acres, and in one instance (Kendal) near to 70,000 acres, have been divided into chapels, the number of ecclesiastical charges is much greater, as the following table shows:

<table>
<thead>
<tr>
<th>Diocese of Carlisle</th>
<th>Archdeaconry of Carlisle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural deaneries</td>
<td>Parishes</td>
</tr>
<tr>
<td>Kendal</td>
<td>6</td>
</tr>
<tr>
<td>Kirkby Lonsdale</td>
<td>1</td>
</tr>
<tr>
<td>Total of county</td>
<td>75</td>
</tr>
</tbody>
</table>

The dioceses of Carlisle and Chester are both in the ecclesiastical province of York, in which consequently the whole county is included.

P. C., No. 1712.

The county is included in the northern circuit. The assizes are held at Appleby. The latter half of the last century; and many alterations have been made since that time. The county is not a market or county town, but it is a busy and thriving place. The county is divided into the following parishes:

<table>
<thead>
<tr>
<th>Parish</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendal</td>
<td>36</td>
</tr>
<tr>
<td>Kirkby</td>
<td>7</td>
</tr>
<tr>
<td>Lonsdale</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
</tr>
</tbody>
</table>

There is a manor house at Kendal, and a mansion house at Kirkby Lonsdale. There are three market towns in the county: Kendal, Kirkby Lonsdale, and Kirkby Stephen. The county is divided into two archdeaconries, that of Carlisle and that of Chester. The latter half of the last century; and many alterations have been made since that time. The county is not a market or county town, but it is a busy and thriving place.

History and Antiquities.—In the earliest historical period this county appears to have been included in the extensive territory of the Brigantes (Brii-gan-tes). Ptolemy, and upon the subjugation of South Britain by the Romans, it was comprehended in the province of Maxima Caesariensis. There is no evidence that this county was ever occupied by the Romans, and the only vestiges of Roman occupation are the remains of a bridge at Kirkby Lonsdale, and a milestone at Kirkby Stephen. The county was inhabited by the Brigantes, and their name is still borne by the inhabitants of the county. The Brigantes were a warlike nation, and were proverbial for their bravery. Their language was the Brigantian, which is still spoken by the inhabitants of the county.

A Roman road ran through the county nearly in the line of the main road from Liverpool to Carlisle, and is still traceable in many parts of the county. The county is divided into two archdeaconries, that of Carlisle and that of Chester. The latter half of the last century; and many alterations have been made since that time. The county is not a market or county town, but it is a busy and thriving place.
the county on the east side, and crossing Stainmoor, ran north-westward by Brough, Warcop, Bongate, and Clappergate, suburbs of Appleby, Kirkby Thore, and Temple
Bowerby, to Brougham, where it crossed the Embom into Yorkshire, as is clearly seen from Kirkby Thore and Vesey (a
few years since) tolerably perfect: it is there six yards wide, and, on level ground, is formed of three layers of
stone, of the aggregate thickness of a yard, the lowest layer being the largest. In other places it was sometimes made of
sand. A road and bridge branched off from this at Kirkby Thore and ran northward over the moors to Caervorran, one of the stations on the Roman Wall, in Northumberland. An antient camp, or
fort, an oblong quadrangle of irregular form, stands on the east side of the Roman Way (or a small round camp) east of Stainmoor, and so exactly on the border of Yorkshire and Westmorland, that part of the camp is in
each county. The fragment of Re-Cross or Here-Cross, the antient boundary-mark of the Scottish principality of Cumber
land, and now of Westmorland and Yorkshire, stands inside the camp. A square stone fort called Maiden Castle,
defended by two ramparts, an inner one of stone with a small ditch, and an outer one of earth with a ditch, stands on
the east end of the road, about two miles west of the camp just noticed.

The Antonine station or town Verteor is by Horsey and other antiquaries fixed at Brough. Mr. Reynolds, in his
'tier Brituanaariam,' fixes Verteor at Bowes in Yorkshire (where a Roman road branches off to another station as has
been the Lavarem of Antoninus), and considers Brough as having been the Brovovacum of Antoninus. Brovovacum is
by Horsey and others fixed at Kirby Thore, to the southeast of which village, on Speedy Moor, are the remains of a
castrum, named Procopiae, of which Thorpe, the principal place standing on the banks of the Wen, where the
Maiden Way diverged from the principal Roman
road. In the neighbourhood of this camp or fort, if not on the site of it, the remains of buildings, consisting of
walls and arched chambers or vaults; a Roman altar, with the inscription of a man named Claudius; and several stones,
and other antiquities, have been dug up. A Roman inscription, 'Deo Belaestvarudo lib. votvm fecit Iovis,' was
dug up here.

The town of Amboglanmv is fixed by Horsey and of Brough. Mr. Reynolds thinks Brocavum to be the same as
Brovovacum which he fixes at Brough; but a comparison of the second tier of Antoninus with the fifth, leads us to coincide in the opinion that they are different places. Some antiquaries have proposed to fix the
Ambalab of the Notitia at Appleby, missed apparently by the similarity of the names; and perhaps for a similar reason Ambogogana has been identified with Ambleside: but by Horsey and most other antiquaries, Ambogogana and Amboglanum have respectively been fixed at Horsley (or Ducket Cross), on the line of the Wall. Horsley proposed to fix the Calatum (Kalavos of Ptolemy, one of the towns of the
Brigantes, which is apparently the same as the Galeum of Antoninus) at Appleby; Camden had identified it with the
site of Brough, an embankment with a ditch inside, which some suppose to fix it at Kendal. The Alone of Antoninus, or, in the Notitia, Aliunc, which Horsley fixes at Whitley Castle in the
south-west corner of Northumberland, others propose to fix at Ambleide, where the evident traces of a
Roman station or town have been observed; and there, which a Roman road ran from Kendal in the direction of
Keswick. Horsley would fix the Dictis of the Notitia at Ambleside.

A number of Roman inscriptions have been found in Westmorland, several of which are given in Horsley's 'Britannia Romana:' none of them however assist us in
fixing the position of the several towns mentioned above.

There are a number of camps and earthworks in Western England (or a related period) of which it is doubtful
whether any of them are to be referred. Near the south end of Dun Fell, on Millburn Forest, is a round camp or fort, surrounded with deep ditches, called 'Green Castle.' An altar, with the inscription Deo Silvanus, was found here. There are several remains of camps and roads on the waste ground of Millburn Forest. At the end of Wanshaw-wood, on the west bank of the Lowther, opposite Lothter Hall, is another round fort called 'Castlesteads;' and at the
south end of Emont bridge is a circular enclosure, formed by a small ditch, and the banks of the river which have
probably been supposed to be a lating-ground of the middle ages.

It is called 'Arthur's round table.' At Tebay near Oxton, on the banks of the Lune, is a circular mound with a trench
round it, partly washed away by the stream. At Sayle Bottom near Great Asby are a number of barrows, with a
large fort and a trench, and a knoll of the same size, on the other side of the river, which they occupy; and at Sandford, between Warcop and Appleby, near the line of the Roman road, are some
more barrows, two small camps, and the ruins of a small round fort, the walls of which are of immense thickness and built
with red stone. The Maiden Castle, near the middle of the

There are some monuments generally regarded as Druidical.

Near 'Arthur's Round Table' was found in 1800, under an artificial hillock, a complete circle of stones en
closing an area nine feet in diameter, and having in it a
large round stone. There is a similar enclosure of two or three yards in diameter, called 'the Druids' Cross.' Another circle
twenty-one yards in diameter, called 'the Cock-stones,' stands at the head of Ellerbeck, in the neighbourhood of
Ulleswater; and there is a large cairn on the descent from the hill. There is a circle seventy feet in diameter, formed of large
stones, on Lowther Scar; and near Shap is the remains of
two converging lines of huge stones of unbewn granite,
called 'Curl Lofts.' Pennant, who has described the
bottom, near Shap, is a circle of stones called 'the Druids' Temple,' which has certainly been used for a burying-place.

Westmorland was probably conquered by the Angles of Northumbria, under Egfrid, who took several towns near
the side and Carleile from the Cumbrian Britons, about A.D. 665. It became part of the
kingdom of Northumbria, of which it shared the fate. The county is mentioned only once in the Saxon Chronicle,
where it is called Wessex. It is merely recorded to have been ravaged (A.D. 966) in the reign of Edgar by Thored the son of Gunner, probably a Danish chieflain. In the later Anglo-Saxon and in the earlier Anglo-Norman period it is said to have been included in the kingdom of
the Scots, and during the reigns of David and William the Conqueror erected the
baronies of Westmorland and Kendal. Little notice of the county occurs in history, except in the record of some of the Scottish invasions. Appleby Castle was taken by
the son of Aymer de Lancastre, and the town destroyed; and the town was again destroyed by the Scots in the reign of
Richard II. The barony of Kendal was held by the family of
Talilebois or Talebois, who after a time took the name of
Le Lanceastre, and Fitz-Reinidef, the members of which
family also took the name of De Lancastre. The chief
motive of the family failing, the inheritance was divided: one
part, called the 'Richmond Fee,' came to the Lindsey
family; another part, the 'Marquis Fee,' to the Rosa family, afterwards by marriage to the Purr and; and the third
called the 'Baron Fee,' to the family of Lumley. The barony of Westmorland was at first united with that of Cumberland, and held by the family of
Le Meschieris, and then by other families. Until, by
favour of Hugh of Lacy, that period for which was created
by Richard II. in favour of Ralph Nevill of Raby, whose heirs
held the earldom until it was forfeited by Charles Nevill, who was one of the leaders of the great rising in the north
against Queen Elizabeth.

The county is divided into four: Appleby [APPLEBY], Kendal, Brough, Buley, Howgill, and Brougham, with Shap Abbey, are the
principal remains of the buildings of the middle ages. Kendal and Brough Castle and Shap Abbey have been noticed. Bailey or Bawley Castle is on the left bank of the Eden below Appleby, and is a mere ruin, showing little remains of its former strength. Howgill Castle, near Milburn on the northern border of the county, is occupied as a farm-house; some of the walls are more than ten feet thick. Of Brougham Castle there are considerable remains. The keep is standing, but all the inner apartments are destroyed, except one vault, the roof of which is formed of groined arches supported by an octagon pillar in the centre. Castle Fields, on Orton; is a walled enclosure, now in ruins, apparently in place of security for cattle during the inroads of the Scots.

In the civil war of Charles I., Appleby Castle was occupied by a royalist garrison, but was obliged at last to surrender. Much is still evident on the islands in Windermere was the stronghold of Colonel and Major Phillipon, brothers, royalists. The major by his daring exploits acquired among the Parliamentarians the nickname of Robin the Devil. In the rebellion of 1745-6 there was some little fighting at Kendal (14th December, 1745), between the townspeople and a party of the rebels then on their retreat toward Scotland; and a few days after a rather severe skirmish at Clifton, on the road to Penrith, between the rear-guard of the insurgents and the garrison of Appleby Castle is on the left bank of the Eden below Appleby, and is a mere ruin, showing little remains of its former strength. Howgill Castle, near Milburn on the northern border of the county, is occupied as a farm-house; some of the walls are more than ten feet thick. Of Brougham Castle there are considerable remains. The keep is standing, but all the inner apartments are destroyed, except one vault, the roof of which is formed of groined arches supported by an octagon pillar in the centre. Castle Fields, on Orton; is a walled enclosure, now in ruins, apparently in place of security for cattle during the inroads of the Scots.

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1839 was 69, or 1 in 19; in England, 1 in 20. The number affiliated in 1834-5 was 69, and 65 in 1835-6. The proportion per cent. of persons married under 21 years of age in the three years ending 30th June, 1841, was 9:57 for women, and 2:82 for men; in England and Wales 13:79 for women, and 4:09 for men: in England and Wales, 9:6 for the two sexes.

The annual value of real property assessed to the property tax in 1815 was 258,199.; property assessed to occupiers, 263,893.; and the profits of trades, professions, &c. were assessed at 61,892. In 1825-6 the centesimal proportion of the various descriptions of property assessed was:—land, 67:6 per cent.; dwellings, houses, and other buildings, 52:4 per cent.; mills, factories, &c., 18:6 per cent.; personal property, &c., 4:0 per cent. The net rental or annual value of real property assessed to the poor-rate in 1841 was as follows:—

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>In land property</td>
<td>£221,054</td>
</tr>
<tr>
<td>Dwellings-houses</td>
<td>37,374</td>
</tr>
<tr>
<td>All other kinds of property</td>
<td>7,907</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£266,335</strong></td>
</tr>
</tbody>
</table>

In the above year the total amount levied for poor-rates was £22,829, being a rate of 1s. 8d. in the pound on the annual value of real property assessed. Taking the annual value of real property in the county in 1841, the rate per head was 4:14. 4d. for each inhabitant; and dividing it by the number of acres, it was 9s. 1d. per acre, which is lower than for any other county in England, and 2d. under the average for Wales.

The county-rate levied at different periods, and the principal disbursements, are shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Income</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1819</td>
<td>3006</td>
<td>6433</td>
</tr>
<tr>
<td>1823</td>
<td>3108</td>
<td>3108</td>
</tr>
<tr>
<td>1828</td>
<td>3162</td>
<td>3528</td>
</tr>
<tr>
<td>1839</td>
<td>3219</td>
<td>3771</td>
</tr>
</tbody>
</table>

The particulars of the county expenditure in 1834 are as follows:

- Bridges, building, repairs, &c. £257
- Gaols, houses of correction, and maintaining prisoners 1065
- Shire-halls and courts of justice 6
- Prisons 250
- Clerk of the peace 110
- Conveyance of prisoners before trial 27
- Conveyance of transports 25
- Vagrants, apprehending and conveying 9
- Constables, high and special 106
- Coroner 47
- Miscellaneous 302

**Total Income**: £3647

The number of turnpike trusts in 1840, was 10; the income from tolls was £834.; parochial compositions in lieu of taxation, £184.; and total income, £914.; the total expenditure for the same year being £869. The bond and mortgage debts amounted to £62,406. In 1836 the debt was equal to 8:4 years' interest; for the whole of England the proportion of income to debt being 4:5 years' income: the proportion of unpaid interest to the total debt was 3 per cent. for Westmoreland; for England it is 12 per cent.

In 1839 the church-rates in Westmoreland amounted to £2651, and the amount from estates and rent charges applicable to the same objects was £271. in 1832. The sum of 10334. was expended in 1839 for the purposes of the establishment, of which 5554. was for repairs of churches.

**Crime**—Number of persons charged with criminal offences in the septennial periods ending 1819, 1826, 1833, and 1840.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Annual average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1831-3</td>
<td>97</td>
<td>138.309</td>
</tr>
<tr>
<td>1832-4</td>
<td>113</td>
<td>138.39</td>
</tr>
<tr>
<td>1835-7</td>
<td>127</td>
<td>139.12</td>
</tr>
<tr>
<td>1838-40</td>
<td>134</td>
<td>139.45</td>
</tr>
</tbody>
</table>

The numbers committed, convicted, and acquitted in each year from 1834 to 1842, were as under:

- 1834: 23, 3517, 3036, 4683, 138, 25, 26, 6
- 1835: 24, 3517, 3036, 4683, 138, 25, 26, 6
- 1836: 25, 3517, 3036, 4683, 138, 25, 26, 6
- 1837: 26, 3517, 3036, 4683, 138, 25, 26, 6
- 1838: 27, 3517, 3036, 4683, 138, 25, 26, 6
- 1839: 28, 3517, 3036, 4683, 138, 25, 26, 6
- 1840: 29, 3517, 3036, 4683, 138, 25, 26, 6

Of 201 persons committed in the nine years from 1834 to 1842 inclusive, 19 were for offences against the person; 27 for offences against property committed with violence; 225 for offences against property committed without violence; 25 for malicious offences against property; 3 for forgery and other offences against the currency; and 5 for offences not included in the preceding classes. The number of females committed was 53. Taking the mean number of committals for 1840-41-42, the proportion of persons committed in one year to the population was almost in 1500, while for England and Wales it is about 1 in 500.

Of 39 offenders (30 males and 9 females) tried at the assizes and sessions in 1842, there were two charged with offences against the person; 7 with offences against property committed with violence; 25 (including 19 cases of simple larceny) with offences against property committed without violence; with malicious offences against property, none; for uttering base coin, none; and 1 for misdemeanour. In no one case was sentence of death recorded. Of 31 persons convicted, 1 was transported for life; 5 for periods above ten and under fifteen years; for periods above seven and under ten years, none; and 5 for terms of seven years, making 9 transported. None were sentenced to imprisonment for a period exceeding one year; 5 were imprisoned for above six months and less than one year; and 17 for six months and under. Of the 8 persons acquitted, 5 were found not guilty on trial; in the case of 2 no bill was found; and in 1 instance there was no prosecution at all. The degree of instruction was ascertained in all but one case: 4 males and 1 female could neither read nor write; 22 males and 8 females could read and write imperfectly; 1 male could read and write; and 2 males and 1 female had received some prior education.

**Saving Banks**—There is only one of these institutions in the county, in Kendal; and the number of depositors and amount of deposits in each of the following years were as under:

- 1833: 712
- 1834: 824
- 1835: 977
- 1836: 999

**Am. of deposits**: £422,813, £429,270, £436,553, £435,471, £434,292, £433,826

The distribution of the sums invested in 1830, 1834, and 1839 is shown in the following table:

| Year | Depo. Depos. Depos. |
|------|---------------------|---------------------|
| 1830 |                      |                     |
|      | Depos. Depos.       |                     |
|      |                      |                     |
| 1834 |                      |                     |
| 1839 |                      |                     |

The deposits of 8 friendly societies, not reckoned above, amounted, in 1840, to 1202.

**Electric Franchise**—The number of county voters registered, in 1835-6 and 1839-40, was as under:

- 1835-6: 1835-4
- 1839-40: 1839-40

**Freeholders of every class**: 3,294
**Copyholders and customary tenants**: 275
**Leasesholders for life or term of years**: 130
**50. tenants at will**: 1,005
**Trustees and mortgages**: 3
**Qualified by office**: 15
**Joint and duplicate qualifications**: 119

- 1835-6: 4,815
- 1839-40: 4,490
Ea»t-?ca^a. better to 3^25 10 was. an. the part and. 2,2i7 the I.9S2 »> L558.10. 143 provinces 705 west the this 1802, when, the archbishopric was abolished, and the duchy was assigned to Heise-Darmstadt, which ceded it to Prussia in 1811. It had at that time an area of 1500 square miles with 131,715 inhabitants. This duchy of Westphalia, which was bounded on the east by the circle of the Upper Rhine, and on the three other sides by that of Westphalia, did not form a part of that circle, but belonged to the latter.

WESTPHALIA, the circle of, was, till the peace of Luneville, one of the largest circles of the empire, its area being about 27,000 square miles, with 2,560,000 inhabitants. It was bounded on the west by the Netherlands, on the north by the German Ocean, on the west by Lower Saxony, and on the south by the circle of the Lower Rhine, and comprehended the bishoprics of Münster, Paderborn, Osnaburg, Liege, and Corvey, the duchies of Jülich, Cleves, and Oldenburg, the principalities of Minden, Verden, and Friesland, the counties of Ravensburg, Mark, Hoya, Diepholz, Schaumburg, Lippe, Bentinck, Tecklenburg, Lingen, Steinfurt, Rietberg, and many ecclesiastical and temporal lordships.

The peace of Tilsit made Napoleon master of all the Prussian dominions as far as the Elbe, and he occupied the electorates of Hesse and Hanover, and the duchy of Brunswick. He did not think it necessary to extend the boundaries of the French empire beyond the Rhine, but he resolved to form a part of these countries into a state dependent on France.

WESTPHALIA, the kingdom of, was created on the 1st of November, 1807, and comprised the territories of Brunswick-Wolfenbüttel and Hesse-Cassel (with the exception of Hanau and Kassel), the Prussian provinces of Magdeburg and the Old Mark on the left bank of the Elbe, Hanover, Hildesheim with Goslar, Mansfeld, Querfurt, Halberstadt, in the state of the electoral Palatins, and the electoral Palatine circles of Schleusingen and Lauenburg.

The area of this new kingdom was 14,560 square miles, with 1,947,000 inhabitants. Napoleon made his youngest brother Jerome, king, who arrived on the 7th of December, in the capital city, Cassel, bringing with him a constitution, which, though it was framed entirely on the French model, and overthrew all the old forms, might have promoted the welfare and happiness of the people had it been strictly adhered to.

The new kingdom was by no means prosperous in the territories which had previously been possessed by the Electorate of Hesse, and were now drained by the French, and some were completely exhausted; in addition to this, Napoleon reserved the half of all the domains to reward his marshals, generals, and others, a garrison of 60,000 men to be kept in Magdeburg, and not only supplied with provisions and clothes, but the large arrears of the military contributions which had been imposed on the several provinces were to be paid to France. Yet in spite of all this, the country gradually revived; an army of 16,000 men was soon formed; the introduction of the French codes, and the many innovations introduced with the new government, were not indeed calculated to please the people, yet they became accustomed to them, and found themselves in a better situation. Some of the dependent counties, and the government acquired strength and security.

But the war between France and Austria in 1809, caused some internal troubles, which gave occasion for many severe measures. The king was compelled to increase his army to 30,000 men, which gave occasion to increase the tax of customs and excise, in order to raise the necessary funds. In 1812, the army was increased to 32,000 square miles, with 2,500,000 inhabitants, of whom 1,947,000 were of the new kingdom; a great number of them were of the soldier class, and many of the people, who had been dependent before the war, found themselves in a better situation. But the war was most agreeable to the people, who were not only supplied with provisions and clothes, but the large arrears of the military contributions which had been imposed on the several provinces were to be paid to France. Yet in spite of all this, the country gradually revived; an army of 16,000 men was soon formed; the introduction of the French codes, and the many innovations introduced with the new government, were not indeed calculated to please the people, yet they became accustomed to them, and found themselves in a better situation. Some of the dependent counties, and the government acquired strength and security.

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In 1812 the king led his army to Poland; he himself was sent home by Napoleon, who was dissatisfied with him; but his fine army of about 24,000 men shared in the ruin of the French in Russia, and only a small remnant returned to their own territory. Before the Leising, Germain-"}

To him, accompanied by a French corps, returned, but only to learn the news of the great battle of Leipzig, and to leave his kingdom. The first sight of everything valuable in the palace, and even part of the rich contents of the museum. Two days after his departure the Prussians returned to Cassel, and in a few days the former governments were restored in almost the whole of the kingdom.

WESTPHALIA, THE PRUSSIAN PROVINCE, was constituted in 1815, of the duchy of Westphalia and of several principalities, some of them former possessions of Prussia, and the remainder obtained partly by cession or exchange, and partly by the decision of the Congress of Vienna. It is situated between 50° 43' and 52° 30' N. lat. and 6° 25' and 9° 20' E. long. Its area is 7,900 square miles, with 1,385,000 inhabitants. It is bounded on the north-west by Holland; on the north-east by Denmark; on the west by the province of Hesse-Cas-"}

The calyx is campanulate, 5-lobed, and yellow. The corolla has a short tube, naked inside; the throat is wide, blotched lilac; the upper lip is flat, bifid, rather spreading; the lower lip spreading, 3-lobed, the middle lobe rather bifid. The stamens 4, erect, distant, included in the tube of the 1-celled glabrous anthers; the two sterile, with bilaterally attached, dependent and empty; and linear lobes. The style is equally bifid at the top; the lobes are subulate, with a stigmatic surface at the apex. The scheme of corolla consists of 4 in the ordinary number. An account of the species of this genus described. They are pretty shrubs, and might be cultivated with advantage for va-"}

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The principal rivers are the Weser, the Ems, the Lippe, the Rühr, and the Vechta. There are no lakes in this province, nor any large ponds or meers: there are numerous marshes, especially in the northern part; the principal rivers are those of the Rhine and the Ruhr. The climate is temperate and healthy: the air is pure, but colder in the southern than in the northern part, where fogs caused by the marshes, are frequent. The winter is cold, the snowset, and the heat in summer is often insupportable in the flat lands. The order of the Rhine is more common in the plain than in the moun-"}

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WETHERBY. [YORKSHIRE.]

WETSTEIN, JOHN JAMES, distinguished for his labours on the Greek New Testament, was descended from a family which long held an important station in the city of Basel. His grandfather, John Rudolph Wetstein, who was born in 1564 and died in 1624, was professor of Greek, and afterwards of divinity, in the univer-"}

The subject of the present notice was born at Basel in 1693. After having studied divinity under his uncle the professor, and Hebrew under Buxtorf, he was admitted a minister of the national church in 1718, on which occasion he defended his Latin thesis on the genuineness and authenticity of the commonly received text of the Greek Scriptures, under the title of "Dissertatio de Variis Novi Testamenti Lectionibus," 4to. To this subject he may be said to have been henceforth devoted his life. He commenced by visiting France and England, as well as the various libraries in Holland, for the examination of manu-"}

It was not till 1730 that Wetstein produced his next publica-"}
the Remonstrants or Armenians appointed him successor to Le Clerc in the professorship of philosophy and history, and although, on his making a public apology for some opinions favourable to Socinianism which had been ascribed to him, the decree of the Basel senate was reversed in May, 1733, he remained at Amsterdam for the rest of his life, and died there, 24th March, 1744. He had meanwhile paid another visit to England in 1740. His edition of the Greek New Testament appeared at last, at Amsterdam, in two volumes, folio, in 1751 and 1752. Notwithstanding many errors by which it is disfigured, this edition (now become very rare and highly prized) is the best text which an exigent critical student. The first volume of an intended reprint of it, in 4to., corrected and improved, appeared at Rotterdam in 1831, under the care of the learned J. L. Oosterhoff, who prevented its being continued. The portion published contained only the Prophets. There is also a previous reproduction of the Prolongmena at Halle, in 1794, under the care of Dr. John Solomon Semler. Two epistles attributed to Clements Romans and Corinthians were built on, and the New Testament, from a Syriac MS., have been proved by Lardner to be spurious.

WETTER. [Sunda Islands, Lesser.] WETTEIAN, LAKE. [Sweden.]

Wexford being a county, or considered a part of a whole in the government of Coblenz in the Prussian Rhine province, is situated in a romantic country on the banks of the Lahn, over which there is a stone bridge, and which is joined by the Dill and the Wetzbach. The town is surrounded with walls, and the entrance is flanked by a tower, and on the side of a hill, on ground so very uneven as to be hardly accessible to carriages. There are three Protestant and two Roman Catholic churches, of which the cathedral, dedicated to St. Mary, is a very spacious and fine edifice, with windows constructed by a French architect. The public establishments and institutions are, an hospital, a united Roman Catholic and Lutheran gymnasium, a school of industry, and a Bible Society. The houses are built in the old-fashioned German style. The population is estimated at 26,800. In the year 1806, 1000 Roman Catholics, and 100 Jews. The inhabitants have some manufactures of stockings, gloves, and tobacco, some tanneries and oil-mills, and a trade in iron. Wettern was formerly a free imperial city, and from 1993 to 1906, the seat of the imperial chamber, or supreme court of appeal of the empire. By the Congress of Vienna it was assigned, in 1815, to Prussia.

(Müller, Geographisches Wörterbuch des Preussischen Staates; Hauss, Handbuch, vol. iv.; Stein, Geogr. Lex. i.)

WEXFORD, a maritime county in the province of Leinster, in Ireland, bounded on the east by St. George's Channel, on the south by the Atlantic Ocean, and on the west, north-westward beyond a few small islands, by the county of Waterford, Kilkenny, Carlow, and Wicklow. The greatest length of the county is from south-west to north-east; and its extreme extent, measured in this direction, from the promontory called Point Hook, on the east side of the entrance to Waterford harbour, is about 54 miles. Its greatest breadth from east to west, between Greencastle and the estuary of the Suir, in Waterford harbour, is about 28 miles; and travelling northward from this line, the breadth does not diminish materially, excepting where the coast is indented by Wexford harbour, to point a little north of Newtownbarry, beyond which it contracts suddenly, so that the north-eastern extremity of the county forms a mere promontory, little more than 12 miles across, between the sea and an island, called St. Mary's or Old Head. The total area of the county of Wexford, according to the Ordnance Survey, is 576,589 acres, 22 poles (rather more than 900 square miles), of which 572,919 acres, 3 rods, 39 poles (about 837 square miles), consists of land, and 3,670 acres (about 5,937 acres) of water. The population, in 1831, was 192,713, which gives an average of about 284 persons to each square mile. According to the evidence laid before a select committee of the House of Lords, upon Irish Tithe, in 1831-2, the figures in which differ slightly from the above, Wexford stands fourteenth in the list of Irish counties for superficial extent, but was then the ninth for absolute extent of land under cultivation, and nineteenth for amount of population. In 1841 the population was 202,953, which gives an average of nearly 268 persons to each square mile; and in the year the county stood seventeenth for the actual amount of population. This is the same as that of the English county of Warwick, but the population in 1831 was less than three-fifths that of Warwickshire; Wexford, the county town, is rather more than 70 miles south of Dublin by a direct line; in about 52° 23' N. lat. and 6° 27' E. long. The range of the county of Wexford is from about 52° 6' to 52° 48' N. lat., and from about 6° 8' to 7° 1' W. long.

Coast-line.-Owing to the position of Wexford at the south-east corner of Ireland, the land must be quite irregular, its coast line being cut off in straight and abrupt angles, and with many promontories, which are occasionally interrupted by very few prominent points. Near the centre of this, which is sometimes called Kilbride bay, a small inlet at Courtown has been formed into a floating harbour for small craft, by the construction of two rough piers. From Courtown to the River Point, on the north side of the entrance to Wexford harbour, a further distance of between 16 and 17 miles, trending rather more to the west, the coast-line is unbroken by any entrance suitable for ships. Indeed the whole line of coast from Arklow, which lies about five miles to the north of the northern boundary of Wexford, to Wexford harbour, presents no opening which can afford shelter from foul weather, except to small craft; and the danger to shipping is great in this part of the coast. It is estimated that the shore is on the average six miles from the entrance of the harbour, which contracts so suddenly opposite the town, as to be crossed by a bridge 1571 feet long, a portion of the roadway of which is made movable, to allow the passage of masted vessels into the inner portion of the harbour, which again contracts, though only for a short distance, to the width of about two miles. A bank of shifting sand outside the entrance to the harbour has been removed for some years; and it leaves so little depth of water that the entrance to the harbour is injurious for anything beyond the size of fishing-boats; and the navigation of the interior is both intricate and shallow. Several remedial measures have been suggested, but none as yet acted upon. The harbour contains a few small islands, called the Saltee islands, the Little Ireland, and Great Island, in both of which there are remains of monastic buildings. From Rosslare Point to Greencastle Point, nearly seven miles in a south-easterly direction, the coast forms another bay, called Greencastle Bay, and opposite the point, about three furlongs from the shore, is a detached rock called Carrick Beacon. From this point, for rather more than five miles, the coast again trends a little westward in an irregular line to Carnmore Point, which forms the south-eastern angle of the county, and of the whole of Ireland. Opposite to this portion of the shore, about seven miles south-east of Greencastle Point, is the Tuscun rock, the position of which is marked by a revolving light, and by a bell in foggy weather. On the south-west hand of the county, from Wexford harbour, a distance of between nine and ten miles in a straight line, is a shallow bay, into which two considerable lakes, called Lady's Island Lake and Tassumahin Lake, open, the former by an artificial communication which is about a mile long. The larger lake is separated from the sea; this lake is remarkable for the circumstance that, while it receives several small rivulets, it is supplied with water from the sea, which communicates with it, and supplies the smaller lake, which is only about half a mile long, and the smaller is about half a mile wide; both contain some rocky points, to which the larger lake is about one-third of the larger island comparable.
Lewis states that, according to a late return from the incumbent of the adjoining parish on the mainland, the Saltee islands are considered to belong to the county of Tipperary, though the smallest of the two, which is nearest to the mainland, a ridge of rocks called St. Patrick's Bridge, having only from seven to ten feet of water at low tide, extends to the adjoining shore, affording an exceedingly dangerous obstacle to the navigation. Several small sand-banks occur in the vicinity, and a floating light is stationed a few miles south of Great Saltee island. Westward of Crossfarnoge Point is Ballyteige Bay, and the coast inclines a little northward as far as the entrance to Bannow Bay, about nine miles west of the point, where a rich coalfield occurs, along which the line, which is a small island, from the sea. Bannow Bay is an irregular shallow inlet which runs about four miles inland, in a north-easterly direction, to Clonmines, and it has a small island, called Bannow island, at its mouth, from which for a distance of eight or nine miles the coast runs in an irregular line to the south-west, terminating in Hook Head, which is the extreme south point of the county. Along this part of the coast are the small dry harbour, used by fishing vessels, called Fethard Bay, the prominent points Bagbin Point and Baginbun Head, where the shore is rocky and precipitous, and several small bays of little importance. At Hook Head is a lofty lighthouse with a stationary light, situated so that the other lights are easily visible. This coast, which is exceedingly rugged and dangerous, and has been the scene of many shipwrecks. Immediately after doubling this point the shore turns back in an easterly direction, and the entrance to the south-eastern boundary of Waterford harbour, and reducing Hook to a narrow peninsula, which, for a distance of three and four miles, nowhere exceeds one mile in width. From Templetown bay, about four miles from Hook Head (within Waterford harbour), the coast runs again towards the west for about five miles, to the estuary of the Suir. The Waterford coast of Waterford harbour is indented by numerous small bays.

**Surface, Geology, Hydrography, and Communications.**—The county of Wexford is in a great measure cut off from the rest of Ireland by natural boundaries. From the extremity of its sea-coast in Waterford Harbour, the estuary of the Suir, and the river Barrow, the lower part of which is called the River of Ross, which flows into it, forms the boundary of the county for a distance, in a straight line, of about 16 miles, to the point of junction of the counties of Carlow, Wexford, and Kilkenny. For 12 or 13 miles farther, in a north-easterly direction, the boundary is marked by the stream that flows from the Mountain and Mount Leinster, the former of which rises in several points, along the boundary-line of the counties of Wexford and Carlow, to elevations of from 1320 to 2200 feet above the level of the sea at low-water, while the other is marked by the stream that flows from the elevation of Cassidy, in the county of Wexford, to the north of the town of Wexford, and also considerably to the south of the forth Mountains. Granite appears about Carnsore Point, in the south-east, and at the Carrick Byrne and Camarosa Hills; and blocks of that substance are frequently seen among the stones at the mouth of the sea, and the whole length of the coast. Beds of greensand also occur in a few places among the clay-slate, which, near Enniscorthy and in several other places, is much intermixed with quartz rock. The principal ranges of elevated land however consist of clay-slate, and good sands are quarried near Newtownbarry, and in other parts adjacent to the granite chain. A black and slightly carbonated clay is found near Enniscorthy, and has been mistaken for coal. That part of the county which borders on Waterford harbour consists principally of clay-slate, with which the nearby valleys are surmounted in two or three places with a cap of sandstone. From Templetown Hill, near the Hook promontory, such a cap declines until it underlies a tongue of flint limestone, which extends to the extremity of Hook Point, and is arranged in thin strata dipping at an angle of 4° to 8° towards the south. This limestone contains numerous bi-valves and corallites. The sandstone rocks form the precipitous coast about Bagbin Point, and appear in several places characterized by the presence of a curious granular rock, which is called Hook Point stone, in addition to the limestone at Hook Point, some is found a little south of Wexford town, and also at Duncormuck, above the middle of the southern coast. The Saltee islands are clay-slate sur-
mounted by beds of sandstone. Lead has been found and worked at Carlow or Carrig. Silver was formerly raised near Clonmines, where there are the remains of an antient mine, and galena has been found there. Copper ore exists at Kerlogue, near Wexford, and it is supposed to have been worked formerly; and plumbago and sabastos have been found near Carlow. The horns of the elk, or horse-deer, and bones of the moose-deer have been discovered in the alluvial districts on the east and south, where marl occurs; and about seven years ago a perfect fossil specimen of the Cerces Megaceros, or gigantic deer of Irelan, of extraordinary dimensions, was found at Ballyhuskard, near the bog of Itty.

In climate, those parts of Wexford which lie open to the sea are milder in temperature than the antient counties of Carlow and Kilkenny. Snow seldom remains on the ground, and the mildness of the climate may often be carried without interruption, while lands ten miles inland are covered with snow or locked up with frost. The southern district is exposed to storms in spring and autumn, and to heavy rains in winter; but the climate is generally more favouring. The rain falls in moderate amounts, and the harvest is at least as early as in those Welsh counties which lie more southerly on the opposite side of the Channel.

The principal communication between Wexford and the interior is the Barrow, which communicates with the Grand Canal. A railroad from Wexford to Carlow was projected a few years since, and the plan was submitted to the Irish Railway Commissioners, but nothing has been done towards its formation. The principal road is the main road of Dublin, which enters the county from Arklow, near its northern extremity, and passes by Gorey and Enniscorthy, and thence along the western side of the Slaney to Wexford; a mail road which leaves this county for Carlow, a few miles north of Newpark, and they may cross the county from Wexford to New Ross. The county is however well supplied with roads in every direction; and the harbours of Wexford and Waterford afford ample facilities for communication by sea. The eastern and southern parts of the county have a deep alluvial soil, abounding with various marls, calcareous sand, and occasionally limestone, but are deficient in peat; and in some parts of the county, where neither turf nor manure is obtained, the soil is of inferior quality. The soil is excellently fit for the growth of wheat, oats, and barley. There are also much hay and straw produced. The Hook peninsula, which is open on both sides to the ocean, and little elevated above it, provides grass, wh erewith to the perfection of sheep, which are exported in great quantities to England. The chief corn-markets are at Wexford, Enniscorthy, and Castlebridge, Wexford being the port through which the trade of the other two passes. New Ross also exports the like produce to a considerable extent, while Wexford and Waterford export wool and flax to Bristol, Liverpool, &c.; and cattle, pigs, and poultry are sent to England by steam-boats from the same ports. For statistics of the produce of Wexford see the next article.

DISTRIBUTION OF LAND.

The exception of parts of two parishes which belong to the diocese of Dublin, the whole of the county of Wexford is in the diocese of Ferns, and the ecclesiastical province of Dublin. It is divided, for civil purposes, into eight baronies, one of which is subdivided into two portions; their names, positions, respective areas, and population according to the returns of 1801, are as follows:

<table>
<thead>
<tr>
<th>Name and Situation</th>
<th>Land</th>
<th>Water</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gore</td>
<td>9,891</td>
<td>6</td>
<td>10,314</td>
</tr>
<tr>
<td>Rosscarban</td>
<td>3,279</td>
<td>28</td>
<td>3,307</td>
</tr>
<tr>
<td>Halshkern</td>
<td>12,407</td>
<td>227</td>
<td>12,634</td>
</tr>
<tr>
<td>Wexford North</td>
<td>1,378</td>
<td></td>
<td>1,378</td>
</tr>
<tr>
<td>Shillelagh</td>
<td>10,345</td>
<td>41</td>
<td>10,386</td>
</tr>
<tr>
<td>Shillelagh South</td>
<td>11,449</td>
<td>21</td>
<td>11,470</td>
</tr>
<tr>
<td>Shefflin</td>
<td>4,987</td>
<td></td>
<td>4,987</td>
</tr>
<tr>
<td>Folkstone</td>
<td>987</td>
<td></td>
<td>987</td>
</tr>
<tr>
<td>Totals</td>
<td>57,919</td>
<td>89</td>
<td>57,998</td>
</tr>
</tbody>
</table>
The county contains the ancient episcopal town of Ferns; the county-town of Wexford; the market and post towns of New Ross, Gorey, Enniscorthy, Newtownbarry, and the disfranchised borough of Fethard; and the post towns of Arbourthorn, Ballymoggog, Camolin, and Tagoat, the last of which was antiently a borough, as were also Clonmines and Bannow. Of the above places Ferns, Wexford, Enniscorthy, and Clonmines are noticed elsewhere.

Barrow, or River of Ross, about 11 miles in a straight line, or 14 or 15 measured along the windings of the river, from the point where it enters Waterford harbour. At high tide the river is navigable up to New Ross, about 500 miles above. At low water there is sufficient depth for vessels of 200 tons; and above the town the river is navigable for barges as far as Athy, where it communicates with a branch of the Grand Canal. The parish lies chiefly in the barony of Barrow, but partly in that of Shels- bury, and the town lies about 191 miles west by north of Wexford, on the road between that town and Waterford, and about 71 miles south-south-west of Dublin. The living is a vicarage, in the diocese of Ferns, forming, with several adjacent rectories, the union of New Ross, which is in the patronage of the bishop. The population of the borough and town, in 1831, was 5011, and that of the whole parish of St. Mary, New Ross, was 7991. The number of houses in the town was 766, inhabited by 1128 families, which gives an average of not more than less than 3 persons, and rather more than 4-5 persons, to each house. The inland traffic of the town was estimated, in 1838, by the Irish Railway Commissioners, to amount to 44,650 tons annually, of which 17,550 tons were carried to, and 27,000 tons from the town per annum. The value of the produce from the town was estimated value of 59,074l., and the imports 26,007l.

On the 25th of March, 1842, the port had ten registered vessels above 50 tons burthen, their aggregate burthen being 1911 tons. The chief articles exported were corn, meal, and flour, wool, blankets, fustian, tobacco, beer, butter, cheese, butter, sheep, and pigs; and the principal imports were of coal, culm, and cinders; fish, and wines. Markets are held on Wednesday and Saturday, and there are several fairs in the course of the year. A charter granted to the town by Roger Bigod, in the 1st year of his reign, was confirmed in 1356, when the town was of the value of 40l. a year, and it was held by a priest being trustees ex officio. The expenditure of the whole, which amounts to 700l. or 800l. per annum, is supplied by bequests, subscriptions, and grand-jury presentments. There are likewise the Vicar's almshouses for three: and the following charitable and public institutions. A Temperance Society, said to be the first established in Europe, was founded in 1829. There are at least two lending-libraries in the town. The town formerly sent two members to the Irish parliament, and now sends one member for the two counties of New Ross and St. Mary's, Old Ross, and the total number of voters on the register, in 1839-40, was 329. The corporation was dissolved by the Act 3 & 4 Viet, c. 106, for the regulation of municipal corporations in Ireland. Immediately east of the parish of New Ross lies that of Old Ross, or St. Mary's, Old Ross, where stood formerly a castle founded by Strongbow, of which the only trace now remaining is an artificial mound upon which part of the building stood.

Gorey, or Newborough, is a market-town situated in the barony of the same name, about 28 miles by road (by road) north of Wexford, and 48 south from Dublin. It sent two members to the Irish parliament, but was disfranchised at the union, when the sum of 15,000l. was awarded to Stephen Esq., as compensation; and it was incorporated in the 17th year of James I., but the corporation was dissolved by the recent act of the 3 & 4 Viet. The name of Newborough was conferred by the charter of James I., but never came into general use. The town contained, in 1831, 325 inhabited houses, 6350 persons, and 650 carriages. The parish, which is also called Christ Church, Newborough, and Killmakilloge, or Kilmeiallge, contains 1437 inhabitants, and is a rectory, which, together with some adjacent rectories, constitutes the deanery of Ferns, in the diocese of Ferns, that of Ferns, in the diocese of Ferns, that of Ferns, in the diocese of Ferns, that of Ferns, in the diocese of Ferns. The bishop of Ferns formerly resided in an episcopal palace at this place, but it was attacked, and the library burned, in 1641, by the parliamentarians, and after being converted into an inn, and subsequently into a barracks, it was at length pulled down. During the disturbances of 1798,

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There are a Protestant church, a Roman Catholic chapel, and public schools for about 70 children, as well as a Sunday-school. At Baginbun Bay, about a mile south of Fethard, Robert Fitz-Stephen landed his forces on his first invasion of the country, and burnt his ships Bagg and Bunn (whence, according to tradition, the place takes its name). The town is situated in a spacious Roman Catholic chapel in the town, and several others in the district. There is also a meeting-house for Wesleyan Methodists. The market-house is a commodious building, which, formerly used as a corn-house, has been converted into a parish school. A new court-house was built in 1819, and the town has a fever hospital and dispensary, a savings-bank (in which there were 319 depositors in November, 1842), a constabulary police force, a brigade of firemen, and a Sunday-school. The North Wexford Agricultural Association, which has aided the improvement of agriculture and cottage industry in the northern part of the county, holds its meetings at Gorey, and several of its members are engaged in the trade of manufacturing and marketing wool. The town contains various small manufacturing establishments. Epiphany and Midsummer quarter-sessions for the county are held here, and petty sessions every fortnight, the latter being held to the north of the town. The neighborhood is picturesque, and contains many elegant villas.

Newtownbarry, or St. Mary's, is situated on the south bank of the river Clody, close to its confluence with the Slaney, in the barony of Scarawalsh, close to the northern boundary of the county. It is about 22 miles north-west from Wexford, and 50 miles south of Dublin. The parish contained 3592 inhabitants in 1831, of which 1430 were in the town, which had at the time 233 inhabited houses and 264 families. The living is a rectory, part of which is a patronage of the diocese of Ferns. The Church of Ireland is attended by the Irish inhabitants, and a Roman Catholic chapel and two public schools; a dispensary; a constabulary police-force; and fortnightly petty-sessions. The place derived its name, which was originally Threaq Munno, or 'The House of Munno,' from St. Munno, who founded an Augustinian monastery in the sixth century, to which the origin of the town is attributed.

Bannow was also formerly a corporate town and parliamentary borough, although its corporation has long been extinct, and it was disfranchised at the Union, when 15,000 votes were purchased for the Union, and 25,000 for the borough. It contains 1481 persons in 1831, lies on the east side of Bannow Bay, a little north-east of Fethard, in the barony of Barony of Fethard, which extends to the sea, are supposed to be occupied by the ruins of the town, which is so completely buried that it has been called the Irish Herculaneum. A lead-mine was formerly worked in this parish, and silver is said to have been raised there.

The mere post-mortem law of the county, as far as it extends to Arthirstown, or King's Bay, in the parish of St. James, and barony of Shelburne, 94 miles south-east by south from New Ross, and 80 miles south by west from Dublin, containing about 170 inhabitants. It lies on the north side of Wexford Harbour, and is about the mouth of the Stour, and has a small trade. In this village James II. is said to have spent his last night in Ireland, after the battle of the Boyne. In the immediate vicinity is Duncannon fort, from a rock to the north of which was embarked King James upon his flight from England, the parish of St. Iberius, and barony of Forth, 8 miles south-south-east from Wexford, at the northern extremity of Lady's Island lake, containing 160 inhabitants.

Clonegal lies chiefly, if not entirely, in the county of Carlow, in the parish of Mayoabamb, which extends into Wexford, in the barony of Scarawalsh. It is a place of little importance, containing 446 inhabitants.

Camolin is in the parish of Donaghmore, and barony of Scarawalsh, situate on the river Ban, and in the road from Wexford, New Ross, and Gorey. It contains 170 inhabitants. It lies on the north side of Wexford Harbour, and on the banks of the Stour, and has a small trade. The county of Wexford sent eighteen members to the Irish parliament—two for the county, and two each for the boroughs of Wexford, New Ross, Gorey, Emniscorthy, Taghmon, Fethard, Clonmines, and Burkes. In the Union with England, it sent to the British parliament—two for the county, which are elected at New Ross and Wexford, and one for each of the boroughs of Wexford, New Ross, and Gorey.

The number of county voters on election in 1838, was 650, of whom 160 were Cahetsheachers. For legal purposes the county is divided into the Leinster circuit; the assizes are held at Enniscorthy, and in general sessions the peace are held at Enniscorthy, and at the times for the trial of the county and magistrates, 2153 inhabitants, of which only 3230 were to the town, or rather village, in 50 houses. A branch of the coast-guard department is stationed here, and a small trade is carried on from the port. The harbour was constructed by government in 1798, and is capable of receiving four small sloops. The town was the capital of the barony of Fethard, but the corporation is now extinct. It sent two members to the Irish parliament, and 15,004, was paid as compensation upon its disfranchisement at the Union.
local government is vested in a lieutenant, 16 deputy-lieutenants, and subordinate magistrates. In military ar-
rangements the county is in the Eastern district, and it con-
tains barracks at Wexford, New Ross, and Duncannon.

The effective strength of the constabulary force of the
county, on the last day of January, 1841, was as follows:—1
county inspector (second-rate); 7 subinspectors (3 first-
rate, 1 second-rate, and 3 third-rate); 8 head-constables
(1 first-rate and 7 second-rate); 38 constables; 189 sub-
constables (1 first-rate and 23 second-rate); and 60
horses. The total expenditure upon the constabulary
force of the county, in the year 1840, was £2,509d. 12s. 8d.

The county of Wexford is included in the Carlow distric
Lunatic Asylum, and the number of patients from it in the
year 1840, was 50,652; the number of patients in the hospitals at the end of
that year was 112, but beds were provided for 265. The
total income of all the establishments, in 1837, was
£5654. 16s. 14d., of which 2945s. 6s. 4d. was provided by
county precity seigneur, 1792. 1s. 3d. by subventions from the
Roman Catholics, and the remainder by Treasury grants, fines, &c.

The grand-jury presents of the year 1840 amounted to
£2,396s. 0d. 6d., distributed as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>New roads, bridges, &amp;c.</td>
<td>£4,515 11 10</td>
</tr>
<tr>
<td>Repairs of roads, bridges, &amp;c.</td>
<td>£12,829 4 2</td>
</tr>
</tbody>
</table>
| Repairs and erection of court and ses-
  sion houses                                | £292 1 1    |
| Ditto of gaols, fridewells, &c.            | £26 10 0    |
| Oil, and Provender and bridewell expenses | £2,529 8 4  |
| Police, and payments to witnesses         | £5,898 1 3  |
| Salaries of county officers               | £3,333 11 3 |
| Public charities                          | £4,544 8 0  |
| Repayment of advanced to government      |             |
| Miscellaneous                              | £1,216 10 0 |

Total: £4,239 0 6

The total amount of county cess levied in Wexford in
the four years ending 1839 was £492,764; and the amount for the last
year of that period being £37,547.

Population, Statistics of Crime, &c.—The population
of the county of Wexford has been calculated, at various
times, as follows:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1792</td>
<td>66,804</td>
</tr>
<tr>
<td>1812</td>
<td>115,000</td>
</tr>
<tr>
<td>1821</td>
<td>160,000</td>
</tr>
<tr>
<td>1841</td>
<td>207,806</td>
</tr>
</tbody>
</table>

The proportion of population in each barony is given in
a preceding column; the classification of the population of
1831, of which 87,095 were males and 94,718 females,
45,414 of the males being 20 years of age and upwards,
is given beneath:

<table>
<thead>
<tr>
<th>Barony</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Families chiefly employed in agriculture</td>
<td>21,465</td>
</tr>
</tbody>
</table>
| Families chiefly employed in trade, manu-
  facture, &c.   | 6,155      |
| All other families | 5,236     |

Of the persons engaged in agriculture, 3978 were occu-
pers engaged in the fisheries, 10,937 in the coal
labourers, and 15,321 labourers. The number of labourers
employed in manufactures and in making manufacturing
machinery was only 109; the persons employed in retail
trade or handicraft, as masters or workmen, 7934; other
labourers, employed in labour not agricultural, 2176; cap-
itals, bankers, professional and other educated men,
1306; male servants 20 years of age and upwards, 693; male
servants under 20 years of age, 639; and female servants,
747; the returns of 1841 no more than a quarter of
which has yet been published; from this it appears that there
were in that year 97,918 males and 104,115 females. The
number of families was 34,718; the number of inhabited
houses 33,507; of uninhabited houses 1108; and of houses
in progress of erection 103.

From the returns of the Commissioners of Public instruc-
tion in 1831, we learn that as in other counties, 42 women
found themselves residing in Wexford, which was Roman
Catholic. The returns for the county are the most reliable
of any; and it is not likely that in Wexford, which was the
centre of a permanent settlement. Camden mentions
another popular designation of the county, as 'the rough
county,' or County Rough; and the northern portion of it
was included in Hy Kinselagh, afterwards called
Weskagh, the territory of the MacMurroughs, who had a
favourite residence at Ferns. Wexford is distinguished

History and Antiquities.—In the time of Ptolemy the
greater part of the present county of Wexford was in-
bhabited by the Menapii, whose chief town, Menapia, sup-
posed to have occupied the site of the present town of
Wexford, was situated on the river Modounus, now Wex-
ford, and was the only town of importance in the
region. The Menapii were a tribe of the ancient Menapii.
The ancient inhabitants are sup-
posed to have derived their origin from the Menapii
of Belgic Gaul, possibly through the Belgae of Britain, and
to be called the Irish menapii. The whole of the
county, which the town of Wexford is called,
was the Menapii, was called

Hook. The country was anciently styled Cotchig,
(a name which appears to be reserved in that of the
Menapii, Menapia), and the

name is said to be derived from


containing the first landing-places used by the English, when, in 1170, or according to other authorities, 1169, they invaded Ireland under the command of Robert FitzStephen, under the circumstances mentioned in the article Ireland, vol. xiii., p. 21. The English army landed at Barginbun, near Fethard, and shortly afterwards attacked the Dunes at Wexford, on which place, after a contest of four days, they obtained possession. MacMurrough then confirmed a grant which he had previously made of Wexford and some adjoining parts to the English adventurers, whose settlement in the country so alarmed the French and the Irish as to induce them to attempting to drive out MacMurrough and his English allies. A treaty was made between the contending parties at Ferns, in which a secret article for the expulsion of the English was inserted; but the invasion was driven off, and the English, after a month's occupation, were driven out of the town, and their conquests were soon generally extended by the prowess of Richard de Clare, surnamed Strongbow, who married Eva, the daughter of MacMurrough, after whose death, in 1172, he became Lord of Leinster, a title which was confirmed to him as a palatinate by Henry II. of England, when he visited Ireland shortly after. The English king retained the town of Wexford for a time in his own possession but soon conferred it upon Strongbow. Wexford was formed into a county by King John in 1210, and in 1215 it was formally exchanged by John, King of England, and William le Marsichal through his marriage with the daughter of Strongbow. On the extinction of his male line, his possessions were divided among his daughters, and, owing to frequent changes of proprietorship and the prevalence of the bankruptcies and seizures formerly existing in Ireland, the state of great confusion, and consequently a considerable part of the county was seized by one of the Kavanaghs, who, early in the fourteenth century, assumed the title of MacMurrough, and declared himself king of Leinster. The right was confirmed by John Esmond, Bishop of Ferns, who had been deprived of his episcopal dignity by the pope in 1349, maintaining himself by force of arms in his castle at Ferns. He was at length, with considerable difficulty, compelled to enter into articles by which he was to keep the peace. From the year 1474 to 1557, when the Irish possessions of the great absentee lords were vested in the crown, the county was divided into two separate jurisdictions: the Liberty, which was governed by the family of Thirlot, Earl of Ormond; and the Great Island, in whose possession the lands formerly belonging to William le Marsichal bad descended; and the Cross, or Church lands in the county, over which a sheriff was appointed by the king. During this period two members of parliament were elected for the Liber and Great Island, but from 1560, under Ormond, were defeated in an attempt upon New Ross in the early part of the war, and subsequently Dunmore town was taken by the Catholics. In 1648 the whole country was reduced to subjection to the Parliament of Dublin, and all the leaders of government, but one, were driven from the country. In the rebellion of 1798 the country enjoyed almost uninterrupted tranquillity, but it became the chief seat of that insurrection, and the scene of many severe conflicts. The county was placed under martial law in the month of April in that year, but no military force was actually sent there until hostilities had broken out elsewhere. It was suspected that the secret organization called the Society of United Irishmen had extended into Wexford, and the harsh conduct of the military in endeavouring to force the suspected parties into a confession of guilt, together with the burning of a chapel at Boulavogue, in the parish of Kilcormuck, exasperated the people, and led them to assemble in arms at Oulart and Kilmeathomas. They were soon dislodged from the latter place by Dunleary, which was demolished, and, as the result of the dispersion of the inhabitants of Wexford, but they appeared to have been not without parallel among the loyalist soldiers. The rebels at length, having chosen for their general Beauchamp Bagnal Harvey, Esq., a Protestant gentleman who had distinguished himself as a friend of the people and an opponent of the despotic measures of government, attacked New Ross, but were repulsed with much loss after ten hours' fighting. Harvey was soon afterwards superseded by a Roman Catholic priest named Roche. The royal forces, having collected their strength from various quarters, then made a simultaneous attack upon Vinegarhill, and forced the insurgents to retreat. Wexford was after this retaken, and many of the insurgents suffered capital punishment; and this complete defeat of the main body of rebels put an end to the insurrection in this district, excepting in the case of a few small detached parties.

The county of Wexford, especially the southern part, abounds with antiquities of Danish, Saxon, and Norman origin, though comparatively few can be assigned to a period prior to the arrival of the English in the country. Tombs, mounds, or ruins, are found in the neighbourhood of Enniscorthy, at Salville or Mountbeque, near Duncormacke, and many other places, of considerable size, near Dunbrody, and one near New Ross. Of smaller raths, which are numerous in the southern baronies, one of the most perfect is at Ballytrent, and is now laid out as a pleasure-ground. There are remains of monasteries at Wexford, Enniscorthy, St. John's, south of Enniscorthy, Ferns, Dunbrody, near the confluence of the Suir and the Barrow, Ross, and Clonmines. Of other ecclesiastical edifices, Tinvery Abbey, near the Bantry Bay, was formerly converted into a dwelling; and Colcough, Ballyharry, and Clonmore are turned into parish churches; and the ruins of Glascarrig are partly used as a farm. There are ruins of an ancient chapel, called St. Vaughn's, near Cramorne. Religious houses were also formerly numerous; of these, the only one whose traces now remain. Ruins of castellated buildings are numerous. At Wexford are the remains of White Castle, near the entrance of the harbour. Carrig Castle, on a rock by the Slaney, lies two miles north-west of Wexford; and among the same districts there are two other, both on the heights of Barmston. There are also ruins of castles at Ferns, Enniscorthy, Mackmime, black castle, on the Slaney a few miles below Enniscorthy, Cuanlan-na-Blathie, or Buttkavans, near Castle; and Castle Head. These, and the other sepulchral rock, and Kilhile castles, in the same neighbourhood. At Ballykeroge are considerable remains of a castle founded by Roger de Sutton, and near the same place are ruins of castles at Stoketown, Aldermaston, Friest's Haggard, and the Great Island. At Muntragh to a hill overlooking New Ross, are the remains of a castle; on the Hook peninsula are ruins of Stude and Houseland castles, and, on its extreme point, of an old fort called Hook tower, now converted into a light-house; and on the Bantry Bay, near where the port is, are some ruins. The very numerous indeed are the remains of this character, that it is observed, in the work of Mr. and Mrs. S. C. Hall, referred to above, that, as evidences of the power of the Anglo-Norman intruders, as well as of their peril in the case of brave the vikings, is not to be despised; but there are no fewer than six score of their castles and towers, now in ruins, in the four southern baronies alone—in Fethard thirty-one, in Ballytrent twenty-seven, in Shelburne thirty-seven, in Shelmalier twenty-five. Among the military remains not mentioned above is Strongbow's fort or camp, near Dun-cormack castle, on Barginbun Head, where intrenchments are yet visible. Of more recent objects of interest in the county may be mentioned a great pile of stones at Wicklow Gap, near its northern extremity, marking the spot where those who fell in a sanguinary conflict between the insurgents and the royal troops, in 1798, were buried. It is the custom for every passenger to add a stone to the heap, and offer a prayer for the souls of the deceased.
extend more than about a third of a mile in a south-western
direction from the harbour. There are six parishes in the
town, the aggregate area of which, according to the Or-
dinance Survey, is 69 acres, 1 rood, 27 poles. The popu-
lation of the entire town and borough, in 1831, was 10,672,
and the number of houses about 1820. The town is gene-

erally well built; but the streets are narrow, partially and
but indifferently paved; supplied with water partly by
pipes, partly by wells, and partly by a public conduit in the
north-eastern part of the town. The streets are criss-crossed
by numerous quays extend along the harbour the whole length
of the town, towards the centre of which the otherwise nearly
straight line is broken by the Crescent Quay, which is
indented in a semicircular form. Near the opposite
Concourse, and across the quay from the quay, is a kind of
breakwater, called the ballast quay or bank, formed by
the ballast deposited there by ships which frequent the
port. The haven contracts abruptly opposite to the
northern end of it, and is called the timber bridge, con-
structed entirely of American oak, at a cost of 17,000l., by
Emanuel Cox, an engineer from the United States, who erected
the several other extensive bridges in Ireland, was built in 1794-95. The width of the opening
crowned is 100 feet, and the 335 feet bridge (exclu-
sive of 6000l. for the repair of that length; but as it had fallen much into decay, it was
some years since repaired, or rather reconstructed, at an
expense of 6000l. In its present state it consists of two
causeways, projecting 630 feet and 188 feet from the north-
eastern and south-western banks of the quay. An old
timber bridge of 733 feet, supported by 23 piers of the
same material, and having a drawbridge for the passage of
masted vessels into the inner harbor, which expands considerably a little above the bridge. The toils of Wex-
ford and the necessities of the coast require that port is considered a good nursery for seamen, and has
many apprentices in the merchant-service. It possessed, on
the 25th of March, 1842, 69 registered vessels of upwards of 50 tons, their aggregate tonnage being 7114 tons; and
the customs revenue returned in the year ended 30th May
1837 was 11,11d. in the previous year they were 8409l. 3s.
4d. The export trade was estimated, according to the
returns published by the Irish Railway Commissioners, to amount to 12,130l. in 1839, and 12,617l. in the
year 1842. More than one-half (in value) of the exports consisted of corn, meal, and flour: butter was esti-
mated at 54,000l.; oxen at 36,000l.; sheep at 15,000l.;
and swine at 12,000l. Of the imports, 150,000l. is set down, as being the cost of the port, and 10,000l. (exclu-
sive of 6300l. for British refined sugar) 26,100l. for coal,
corn, and cinders; 19,400l. for cast-iron; and 19,000l. for
wrought-iron and hardware: the remaining items com-
priised chiefly manufactured goods, and various articles of
decorated plate. The cargo of vessels engaged in regular
communication with Liverpool and other places, and
the Slaney affords navigable communication with Ennisworth and the interior of the county. The shipping
interests of Wexford have been promoted by the formation,
within the last ten years, of a bank and also by the
establishment of the Bath Hotel, in which the Accts. of
Capt. Vallotton was killed. A monumental obelisk on the
Windmill Hill commemorates this event. During the
insurrection of 1798 the town was evacuated by the garrison,
in a panic occasioned by the defeat of a detachment of
royal troops marching from Wexford to assist the insurgents, and the rebel
troops immediately made it their head-quarters. They retained
possession from the 20th of May to the 21st of June, during
which time they beheaded ninety-one prisoners on the
bridge; but after the defeat of the insurgents at Vinegar-
hill the town was reoccupied by government forces under
James II. gave one at a later period, but it was annulled
after the Revolution. Wexford is one of the towns whose
portions were dissolved by the act of the 3rd and 4th of
Victoria. The town sent two members to the Irish
parliament, and now sends one to that of Great Britain.
The number of registered voters in 1839-40 was 405.
(Ordinance Survey of Wexford; Lewis's Topographical
Dictionary of Ireland; Parliamentary Papers; &c.)

WEY. [WIGHTS AND MEASURES.]

WEY. [WIGHTS AND MEASURES.]
WEYERMAN, JACOB KAMPO, a Dutch fruit and flower painter, born at Breda, in 1678, notorious for his bad character and scandalous writings. He wrote a set of lives of Dutch painters, which, according to Van Gool, are full of calumnies; and Descamps says of him, "Ils remplis ses pages d'innombrables calomnies, d'impietés, et de calomnies." This work is entitled 'Leverlijdenissen der Nederlandische Konstschikters en Schildersena." 'Sgravenhage, 1729, 4to.

In one of his scandalous writings he attacked the Dutch East India Company; and in 1739 he was condemned to perpetual imprisonment at his own cost, in which he died in 1747.

He learnt painting of Ferdinand van Kessel, and had great skill in his style and great facility in writing; he however neglected his art and abused his abilities, and, according to all accounts, appears to have been a thoroughly bad man in every respect.

(Van Gool, 'Schouburg der Nederlandische Schilder, &c.; Descamps, 'La Vie des Peintres Flamands, &c.)

WEYMOUTH and MELCOMBE REGIS, in the Dorchester hundred, in the county of Somerset, is a seaport, and borough, which was distinguished as a market and place of resort, in the reign of Henry VIII., from the site of its bathing-place, known as the Great Sea Bath, which was in operation in the reign of Edward IV., and afterwards called the Backwater, a large pond, which was of considerable extent, and formed a body of water of considerable depth, with an arm of the sea, and a part of the estuary of the Wey, known as the Backwater. The present Backwater is a pond of considerable extent, and is a favorite resort for the bathing and boating parties of the town, and is connected with the sea by a channel, known as the Channel Stream, and with the mouth of the Wey by the Backwater. The Backwater is a body of water of considerable extent, and is a favorite resort for the bathing and boating parties of the town, and is connected with the sea by a channel, known as the Channel Stream, and with the mouth of the Wey by the Backwater. The Backwater is a pond of considerable extent, and is a favorite resort for the bathing and boating parties of the town, and is connected with the sea by a channel, known as the Channel Stream, and with the mouth of the Wey by the Backwater. The Backwater is a pond of considerable extent, and is a favorite resort for the bathing and boating parties of the town, and is connected with the sea by a channel, known as the Channel Stream, and with the mouth of the Wey by the Backwater.

WEYMOUTH Proper is described as having the appearance of an old fishing-town, with mean-looking houses and narrow streets. Melcombe is situated on a tongue of land between Weymouth Bay and the Backwater, very narrow on the north-east, but becoming wider towards the harbour, where the width is about a third of a mile; the ground on which it stands is low, a considerable part of it having been reclaimed from the Backwater by embankments, which were afterwards converted into a park. There is a pond, which is called the Esplanade, extends nearly a mile, with a gradual slope towards the shore; the ranges of houses which face this Esplanade are handsome, and many of them large; most of them are occupied by those who resort to the town as a summer resort, and who have become adapted, the sand being smooth and firm, and the slope very gradual. The houses in the back part of the town are inferior and the streets narrow.

Weymouth had been a declining place for many years from various causes, but chiefly perhaps in consequence of the rivalry of Poole, till it was brought into requisition as a bathing-place, about 1783, by Ralph Allen, of Bath. The duke of Gloucester went there in 1780, and had a house built for his residence. George III. paid his first visit in 1788, and King George IV. in 1789, and royal visit, and others frequently. The climate is very mild, Weymouth Bay being sheltered to the north by surrounding hills, which have a gradual slope to the south towards the beach. There are assembly-rooms, a theatre, two national schools, Pannier, Lancasterian, and two churches, one of which is in Weymouth, which is a curacy attached to the rectory of Wey Regis, and there are places of worship for Independents, Baptists, Quakers, and Methodists. In the savings-bank the number of depositors, November 20, 1839, was 8159, with which sum on which interest is allowed is 14s. 6d. Ship-building is carried on, and rope-making; but little is done in any other trade.

The number of vessels above 50 tons burthen belonging to the port of Weymouth, in 1840, was 56, the aggregate burthen to all accounts being 57 tons. The gross receipt at the customs-house, in 1839, was 12,907l. 7s. 7d.; in 1840 it was 14,727l. 11s. 4d. The trade of the port of Weymouth, in 1833, was—

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign vessels, with cargoes, inwards</td>
<td>37</td>
</tr>
<tr>
<td>Foreign vessels, with cargoes, outwards</td>
<td>35</td>
</tr>
<tr>
<td>Coasting-vessels, with cargoes, inwards</td>
<td>343</td>
</tr>
<tr>
<td>Coasting-vessels, with cargoes, outwards</td>
<td>331</td>
</tr>
<tr>
<td>Post-office packets, inwards</td>
<td>101</td>
</tr>
<tr>
<td>Post-office packets, outwards</td>
<td>101</td>
</tr>
<tr>
<td>Registered vessels belonging to the port</td>
<td>79</td>
</tr>
</tbody>
</table>

Previous to the Municipal Reform Act, the corporation consisted of a mayor, an indefinite number of aldermen, two bailiffs, and twenty-four principal burgesses. The Municipal Reform Act divided the borough into two wards, with six aldermen, and a council of eighteen. The number of burgesses was reduced to twelve, each electing 210l. in 1837, or 55s. 8d. 61s. 319. The total expenditure of the borough in 1840-41 was 2165l. 3s. 10d.

Weymouth and Melcombe Regis. Before the Reform Act returned four members to the House of Commons. The right of voting was in the corporation, the members of the two houses, and the freeholders. There were no freemen. The number of voters reckoned to be about 2000, but the largest number of electors who polled at any election for thirty years previous to 1831, was 745. The borough now returns two members to the House of Commons. The number of electors on the register in 1833-4 was 617, of whom 536 were 10l. householders; the number on the register in 1839-40 was 600, of whom 507 were 10l. householders. The population of the borough, in 1831, was—

- Chapelry of Weymouth: 3299
- Parish of Melcombe Regis: 5126

7525

In 1821 the population was 6692. The number of houses, in 1821, was 1213; in 1831 the number was 1465. The population within the limits of the parliamentary borough in 1831 was 8096.

Weymouth is 128 miles from London by road. There is no direct mail from London, but a cross-mail from Dorchester, which is 5 miles north of the town. Weymouth is an ancient place: it is mentioned in the 'Domesday Book,' and was afterwards a place of some naval importance. In 1347 it furnished 20 ships and 264 men towards the armament destined to attack Calais. In 1588, when the Spanish Armada sailed to attack England, six ships of the English fleet belonged to Weymouth. During the civil war under Charles I., Weymouth was alternately garnished by the royalists and the parliamentarians till 1644, when the parliamentarians obtained possession which they held till the close of the war. In the reign of Charles II. Weymouth was greatly injured by a fire, and 3000l. was collected in 1673 by a brief, towards repairing the damage which it had sustained. The earliest charter known to have been granted to Weymouth was one in 1262, by the prior and canons of St. Swithin, Winchester, to whom the manors of Weymouth and Melcombe had been granted by Henry I., a grant which was confirmed and extended by Henry II. A grant of certain liberties and privileges was made to Melcombe Regis by a charter dated 27 May, 8 Edw. I., and followed by another, dated 22 Jan., 11 Edw. II.; by one dated 3 Nov., 2 Edw. III.; and by one dated 16 May, 2 Eliz. The union of the two boroughs was by an act of parliament, dated 2 April, 6 Eliz. July 1, 14 James I. Another charter of incorporation was granted; and to remedy certain defects in this charter, an amending and explanatory charter was obtained, 19 August, 21 Geo. II. In 1822, in consequence of the diminution of the number of principal burgesses, it was determined that the corporation might be legally dissolved, to avoid which a new charter was obtained, 25 May, 44 Geo. III., which was the governing charter of the borough till the Municipal Reform Act in 1835.

(Municipal Corporations' Reports, 1835; Boundary Reports, 1832; Hutchins's History and Antiquities of the County of Dorset; Parliamentary Documents.)

WHALE FISHERY. {FISHERIES.}

WHALE—Cetacea—order of aquatic mammals with fin-like anterior extremities, the posterior extremities being absent, or rather, having their place supplied by a large horizontal caudal fin or tail, without an external ear, without hair on their external integument, and the cervical bones so compressed as to leave the animal without
any outward appearance of a neck. This order comprises
the largest animated forms in existence; some of the ge-
nera composing it are phytophagic, or plant-eaters; others
are zooplagic, or animal-eaters.

**Systematic Arrangement.**

The cetaceous mammals, whose abode is either in the sea
or the great rivers, resemble the Fishes so closely in exter-
nal appearance, that it is hardly to be wondered at that
not only the vulgar, but even some of the earlier zoologists
looked upon them as belonging to that class. This notion
is kept alive to the present day in the announcements of
the comparative success of those ships which are employed in
the *Whale Fishery*; for not only is it conveyed by that
general term for the capture of whales, but by statements
that they are provided with three *fish*, another with four
*fish*, a third with one *fish*, &c.

If we turn to the sacred scriptures, we find the Hebrew
words *Thau* and *Thannin*, which have been translated by
the words *siren* (the name used by Eneas Grazeus to de-
signate the Fish of whose belly Hercules is said to have
escaped after having been swallowed) and *whale*. *Lycoph-
ron* terms the marine animal that so disposed of Hercules
when he was shipwrecked, *εὔγαρσιν* *κλὼν*, a shark.

The *Delphinus* or *Dolphin* is thus translated from the
Hebrew words above noticed, דְּלֵפִּינוֹס דְּלֵפִּינוֹס, in the 21st verse of the first chapter
of Genesis. The same Greek word is used in the
seventeenth verse of the first chapter of Jonah. In the
book of Job (vii. 12), and in that of Ezekiel (xxii. 2), the
translators used *Fish* and *fish*; in Matthew (xii. 40),
where the swallowing up of Jonah is alluded to, *siren*
is employed.

In Barker's Bible (1615) the passage in Genesis is trans-
lated, 'Then God created the great whales, much the same
as our whaling-men now read in our churches,' And,
God created great whales.

The other passages are translated in Barker's Bible as
follows: — *Jonah* (i. 17), 'Now the Lord had prepared a
great fish to swallow up Jonah: and a fish was in the
bowl,' &c.; in Ezekiel (xxii. 2); 'Thou art like a lion of
the nations, and art as a dragon in the sea, ; in a note, 'or
*whale* is added': —

Matthew (xii. 40), 'For as Jonas was three days and three
nights in the belly, &c."

In the version now used in our churches the passage
in *Jonah* is *verbatim* the same as in Barker; that in *Job
is thus rendered, 'Am I sea, or a whale, that thou seest
set a watch over me? that in Ezekiel, 'Thou art like a lion
of the nations, and thou art as a whale in the sea?'
— that in Matthew is identical with the passage in Barker.

These are merely cited as examples: there are other
passages in the Old Testament in which the words whale
and fish are employed, and the English translators would
be beside the present question to enter into the dis-
cussion whether the whale was meant, or a crocodile,
as some will have it, in the verses above quoted; it is sufficient
for our purpose to show the commonly received opinion
that a whale was a *fish*.

In the index to Pliny's *Natural History* we find the
whales treated as fishes, *Balaenarum piscium consideratio,*
*Balaena piscis, &c.* But, in the work itself the *Balaena* and
*Physeter* are noticed as *Baleae, and a fair account is given
of these animals*. — that in Ezekiel, 'The seventh young
of his ninth book, indeed, is headed ' An splendid piece, an
dormant, ' but in that chapter he expressly states that
neither whales nor dolphins (balaenia ucc delphinus) have
gills, but breathe by means of fistule, or blow-holes, which
appear in the post-nasal region of the brain.'

Aristotle, whose great zoological work Pliny had closely
studied, was certainly aware of the broad distinction
between the whales and dolphins (the position of whose
blow-holes and nostrils) and fishes. Geisser separated the
whales from the fishes, including them in a distinct order of marine animals. Aldrovandi
separated them also, though they appear in the same vo-
lume, the title of which is *Des Piscibus, Libri V.*: *De Cetis,
Libri Unus.* Jolton gives them a separate chapter at the
head of his book *De Piscibus.*

Ray, in his Synopsis *Methodica Piscium* (1713), ob-
serves that the term *fish* is extended, even by the learned
of our country, to the bloodless aquatics, as they were then
termed, *Exangui aquatica, such as Crustacea, Testacea,
and Molnia, or shell-less mollusks. On the other hand,
some, he remarks, not only exclude those *Exangui aquatica,* but also the Cetaceas (*Cetaceum genus, seu Beller-
marina*), contending that no other animals can justly be
termed fishes except those which breathe by means of gills
have but one ventricle to the heart. With the latter Ray
agrees, and expresses his own opinion that, if we speak
properly and philosophically, the name of fish should be re-
stricted to such last-mentioned animals only, and points
out the absence of any relationship of the *Pisces Cetacei*
with the *Mammalia*, says that it is a distinctive mark of
the place where they spend their lives, the external
figure of their body, their hairless skin, and their natatory
progression, the Cetaceae have hardly anything in common
with the true fishes, but in other respects agree with the
viviparous chelicerated.

Nevertheless, that he may avoid dissent from received
opinions and the appearance of paradox, Ray declares
that he will not innovate, but consider the Cetaceous
animals as fishes; and he proceeds to define what a fish is, thus:

the aquatic animal having blood, wanting feet, swimming
with fins, covered either with scales or with a naked,
smooth, hairless skin, passing its life in the waters, and
never voluntarily leaving it for the dry land.

The Cetaceous, or Whale, marine, form his first
section, and are immediately followed by the Cartilaginous fishes, called *Squali* (*Squalo*) by Aristotle. Of the Ceta-
ceae he says that they breathe, like quadrupeds, by means
of lungs, copulate, bring forth their young alive, and
yet approach in some things to the true fishes, and in
their use of all their internal parts agree with those animals.

The following are the genera enumerated by Ray:

**Balaena (2 species);** *Cete* (1); *Orca* (2, but one not clearly defined); *Albus; Monoceros; Delphinus: Phocaen.*

and divides the *Cetacei generalis Pisces, seu Baleae,* into
two great groups—the toothed and toothless; the latter
having horny lamine in the upper jaw.

The Toothed Whales are subdivided into those which
have teeth in both jaws and those which have teeth in
the lower jaw only; and there are further subdivisions de-
pendent on the absence or presence of the back-fin and
the shape of the teeth.

The Toothless or Whalebone Whales are subdivided also
with reference to the absence or presence of the back-fin,
the presence of blow-holes, the employment of nostrils in
respiration, the presence of plats on the belly, and the
width of the lower jaw.

Linnaeus, in his last edition of the *Systema Naturae* (1766), defines the *Fisca* or props of his *Mammalia* to be
four-footed animals with the exception of the cetaceans
which are merely aquatic, in *quibus pedes posteriores in caudae
pinnam comeder;* in other words, in which the posterior
limbs are manacled or conjoined, so as to form a tail-fin.

The seven orders of *Mammalia* in this subdivision are
*Mutica.* The seventh and last order, *Cete,* is the only one
belonging to the section *Mutica.*

The following is the Linnaean definition of the last-named
order:

*Pectoral fins in lieu of feet, and feet conjoined into a
horizontal flattened fin in lieu of a tail. No claws, Teeth
cartilaginous. Nose often a frontal pipe. Food, mol-
luks, fishes.*

*Localia, Ocean.*

Linnaeus then declares that he has separated these cata-
ceans from the fishes, and associated them with the mam-
imals, on account of their warm bicipital heart, their lungs,
their moveable eyelids, their hollow ears, *penem intractum*
transmitting them with proper reasons, &c. and the numerous
express words, *ex lege nature juris moritoe.*

Here then we find the decisive step taken, with the
unfinishing firmness of a master mind, relying upon the
philosophical principles that demanded the separation, and
the consequence of placing them in a class apart, the fish
which he knew to be a mammiferous animal. Some
parts of his definition—much of it—may be open to
criticism, as where he designates the teeth as caralliginous,
a term probably used to comprehend both the horny
toothed whales and the true teeth of the other cetaceans;
but the broad line of distinction is im-

satisfactory, and will ever remain.

The order *Cete* is thus summarily defined by its great
founder: —
Spinescules upon the head. Pectoral fins and horizontal caudal fin without claws.

Genera: Monodon, Balaena, Physeter, Delphinus.

This, the last order of the Linnæan Mammalia, is immediately preceded by the Beluga.


The Cétacés form Cuvier's ninth and last order of Mammalia, the Ruminants (Percaea, Linn.) being the eighth.

Cuvier, as we have seen, divided the orders of the mammals which he defined as mammiferous animals, into those with teeth and those without. Without further consideration, we see at once that the cetaceans are mammals without teeth, and without posterior feet. Their trunk, he states, continues itself with a thick tail, which a cartilaginous horizontal fin terminates, and their head is joined to the trunk by a neck.

The ears, of which, he observes, some part is perceptible, and composed of cervical vertebrae, which are very delicate, and in part joined or soldered together. Their anterior extremities have the first bones shortened and the succeeding bones flattened and enveloped in skin: this gives nearly entirely the external form of the fishes, except that these last have the tail-fin vertical. The cetaceans therefore remain constantly in the water; but as they aspire by means of lungs, they are obliged to come frequently to the surface for which their broad flat ears open externally, although with very small apertures: their viviparous generation, the texts by means of which they suckle their young, and all the details of their anatomy, sufficiently distinguish them, Cuvier observes, from the fishes.

The same great zoologist remarks that their brain is large and its hemispheres well developed; the petrous bone, or that portion of the cranium which contains the internal ear, is separated from the rest of the head, and only by the bony membranes. There is no external ear, nor are there any hairs upon their bodies. The form of their tail obliges them to move it from above downwards for their progressive motion, and aids them greatly in maintaining their position in the water.

For those genera, which, up to Cuvier's time, naturalists had reckoned among the Cétacés, he adds those which had formerly been confounded with the Walruses, and which form their first family, viz.:

The Herbivorous Cetacea.

The teeth of these have a flat crown, which, Cuvier remarks, determines their mode of life, loading them often to leave the water to creep and feed on the bank; these have two teeth on the breast, and hairy moustaches; two circumstances, he observes, which, when they have been seen from a distance with their heads raised vertically out of the water, have given them some resemblance to women or men, and have probably given origin to the stories of some travellers who pretend that they have seen Trolls. They have no front teeth; the battle-axes or boar's tusks open upwards, they are only pierced in the skin at the end of the muzzle. Their stomach is divided into four pouches, two of which are lateral; and they have a great caecum.

Cuvier divides the Herbivorous Cetacea into—
1st, the Lamantins, or rather Manatees (Manatus, Cuv.);
2nd, the Dugonges, Lacep. (Halicore, Ill.);
3rd, the Stel-eres, Cuv. (Rytiria, Ill.).

Cuvier's second family of this order consists of the 'Ordinary Cetaceans.'

These are distinguished from the preceding by the singular apparatus which has procured for them the French name of Stenflous, or Blowers. As they take, together with their prey, very large volumes of water into their vast gaping mouth, there was a necessity of some outlet to get rid of it; it passes across the nostrils by means of a particular disposition of the velum palati, and is collected in a sac placed at the external orifice of the cavity of the nose, whence it is driven out with force by the compression of powerful muscles by a narrow aperture pierced at the top of the head. Thus it is, adds Cuvier, that they produce those jets d'eau which cause them to be seen afar by voyagers.

Mr. Bennett, it is true, in a paper read some time since before the Zoological Society of London, on the habits of the Cachalot, denies that it ejects water from the blow-hole, and asserts that the spouting consists only of the accumulated mucus and condensed vapour of exhalation; but Mr. Bell well observes, in answer to this, that we have not only the positive attestation of M. Lesson, P. C., No. 1714, who declares that he has seen them spout water when he was within a few yards of them, but the admission of Mr. Bennett himself, who says that the blow-holes serve to carry off the water received into the mouth when feeding.

Mr. Bell remarks, in conclusion, that the discrepancy may probably have arisen from the fact that some species spout more than others.

But to return to Cuvier. He further observes that their nostrils, incessantly traversed by floods of salt water, could never, by ordinary means, become malleable animals, and that the special perception of odours. The whales therefore are without those projecting laminæ which are to be found in other animals; the olfactory nerve is wanting in many, and if they have it, it is not of much use to them, for they are very much oblitered. Their larynx, of pyramidal form, penetrates into the back nostrils for the reception of the air and for the purpose of conducting it to the lungs, without any necessity on the part of the animal to lift its head and mouth out of the water; there are no projecting laminæ in their glottis, and their voice must be reduced to simple bellowings. They have no vestige of hair, but their body is covered with a smooth skin, under which lies the thick blubber abounding in oil, and the principal organ of their life, a sac into which the water and the anus, and they are unable to seize with any of their fins. Their stomach has five, and, sometimes, as many as seven distinct pouches; in lieu of a single spleen they have two small and globular organs; their teeth have two cusps, and similar to each other; they do not masticate their food, but swallow it rapidly. Two small bones suspended in the flesh near the anus are the only vestiges of posterior extremities. Many have on the back a vertical fin, much as in the sea-horses, but not sustained by bone. Their flattened eyes have a thick and solid sclerotic; their tongue has only smooth and soft integuments.

Cuvier divides this group into two small tribes: 1. Those whose head bears the ordinary proportion to the body; and 2. Those which have the head disproportionately great.

1st Tribe.

Genera: 1. Delphinus, Linn.: with the subgenus Delphinos, Cuv.; Phocaenides, Cuv.; Delphinopterus, Laeçp.; and Hyperoodon, Lacep.

2nd Tribe.

These cetaceans have the head so large, that it is either a third or one-half of the length of the body; but neither the cranium nor the brain participates in this disproportion, which is entirely due to an enormous development of the bones of the face.

Genera: 1. Physeter, Linn. (the true Cachalots); with the subgenus Physeter, Lacep. (Cachalots with a dorsal fin).
2. Balaena, Linn. (Whalebone Whales): with the subgenus containing the Balanopterus of Lacépède, viz. the Balanopterus with a smooth belly; and the Balanopteris; the first with a plaited belly, commonly termed Balaenas. (Régne Animal.)

M. Lesson divdes the Mammiferous animals into three sections: 1. Those with unguiculated toes (Unguiculata of authors). 2. Those with ungualated toes (Ungulata of authors). 3. Those with unguiculated toes (Ungulata of authors). Of the third section there is only one tribe, the eighth and last in M. Lesson's system, thus defined:

Teeth variable in number, often replaced by horned laminae, body organized for living in the water; two teats.

Cetacea. These are separated into two divisions:

1. The Herbivorous Cetaceans.
2. The Cetaceans properly so called.

These M. Lesson subdivides into two groups: 1st. Those with a small head; 2nd. Those with a large head.

Mr. Swainson takes the 'Cetacea' as the third order of Mammalia, placing it between the Fishes, the last family of which is formed by the Phocidea, or Seals, and the Ungulata, the 1st tribe of which consists of the 'Pachydermes.'

The Cetaceans are thus defined by Mr. Swainson:

Body pisciform; pectoral fins two; caudal fin one, horizontal; ears with a very small external opening.

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Grinding-teeth with flat crowns; whiskers hairy; nostrils placed at the muzzle in the skin; body very large; mammae two on the breast.


Family 2. Ceti.

Teeth conical or wanting; nostrils assuming the form of spiracles; skin smooth, shining, and destitute of hairs in every part; mammae placed near the vent.


Small-headed Cetacea: head moderate; canine teeth, or none; carotid. Genus: Cetodon, B.; Phocaena, C.; Delphinus, Linn.; Delphinapterus, Lacép.; and Uranodon, Ill.


Head disproportionally large: of these the two first genera are furnished with teeth in the lower jaw, which are wanting in the two last groups.

Genera: Physeter, Lacép.; Catodon, Lacép.; Balæna, Linn.; Balanoptera, Lacép. (Classification of Quadrupeds.)

M. F. Cuvier thus arranges the order Cetacea:—

Tribe 1. Phytophaga.

Char.—Teeth of different kinds; molaæ with flattened crowns, corresponding to the vegetable nature of their food. Lips provided with tapering bristles. External nostrils always two, situated at the extremity or upper part of the rostrum, which is obtuse.

Genera: Manatus, Cuv.; Halicore, Cuv.; Rytina, Ill.

Tribe 2. Zoophaga.

Char.—Teeth of one kind or wanting, not adapted for mastication. Mammae two, pudendal. External nostrils double or single, situated on the top of the head.

A. With the teeth modified as incisors.

Family Delphinidae.

Char.—Teeth in both jaws, all of simple structure, and generally, conical form. No sacæm. Genus: Delphinorhynchus; Delphinus; Iniæ; Phocaena, Lacép.; Delphinapterus, Lacép.

M. F. Cuvier is of opinion that the following genera seem to form the types of as many distinct families of Zoophagous Cetaceans.

Genera: Monodon; Hyperodon; Platanista.

B. With the head of immoderate size, equalling one-third the length of the body.

Family 1. Catodontidae.

Char.—Teeth numerous, conical, but developed only in the lower jaw. External nostrils or blow-holes confluent; no sacæm.

Genera: Catodon; Physeter.

Family 2. Balaenidae.

Char.—No teeth; their place supplied by the plates of baleen or whalebone, attached to the upper jaw. Blow-holes distinct; a sacæm.

Genera: Balaenoptera; Balæna. (Histoire Naturelle des Citadels, &c.)

Mr. J. E. Gray makes the whales (Ceti) the third order of Mammalia, stating that they are peculiar for their fish-shaped, nearly bald body; that their hinder limbs are united, forming an horizontal tail; and that they have simply conical rootless teeth or whalebone in the jaws.

The family of the whales (Balaenidae), he observes, have a total of the least one third the length of the body, as the tribe of whales (Balæna), which have whalebones in the jaws, and the Catodonts or Physeterina, which have simple conical teeth, as the Spermaceti Whale (Catodon), and Cachalot (Physeter).

The family of porpoises (Delphinidae), which have a moderate or small head and an elongated or smooth body, as the Dolphins (Delphinus), which have conical jaws and teeth, the Porpoises (Phocaena), which have a shorter head and compressed, long, thin jaws, which only have a few teeth,—all these, Mr. Gray observes, have front limbs, while the Susuk (Platanista) has triangular truncated limbs, an elongated beak with compressed teeth, and the bones of the skull bent over the forehead, so as to form an arched cavity.

In the other families, Mr. Gray remarks, the skin is more or less porous, and the lips always furnished with rigid whiskers; the teeth are flat-topped. The Manatees (Manatidae) have eight grinders in each jaw, and the tail rounded at the end. The Dugongs (Halicoridae) have only three or five grinders in each jaw, and the end of the tail truncated or two lobes.

* Ceti.

Family 1. Balaenidae.


Family 2. Delphinidæ.

Genera: Delphinus, Delphinorhynchus, Phocaena, Delphinapterus, Heterodon, Manodon, Hyperodon, Platanista.

** Sirenia.

Family 3. Manatidae.

Genus Manatus.

Family 4. Halicoride.

Genus Halicore.

Family 5. Rytinidae.

Genus Rytina. (Synopsis Brit. Mus.)

Organization.

Phytophagous Cetaceans.

Skeleton.

Lamantin or Manatee.—The nasal bones in the skull of the Manatee are very small, almond-shaped, separated from each other, and let in on each side in a notch of the frontal bone. The result is, that while the nostrils are very large, there is an opening in the bony nostrils. The rest of the bones of the nose are nevertheless replaced by cartilages, so that in the living animal the opening of the nostrils is, as ordinarily, at the end of the muzzle. The intermaxillary bones consist of a single bone in the adult, not at any period reabsorbed except during the first days of embryonic existence; they are notwithstanding very much extended longitudinally, and they re-ascend along the edge of the nostrils to above the region of the eye. The orbits are very much advanced, and very projecting below.

The orbital hole is pierced in the re-entering frame of the orbit with the anterior part of the maxillary bone, so that it is not perceptible when the cranium is seen in profile. This projection of the orbit causes the distance between the lower external border of the sphenoid portion of the intermaxillary bone and the teeth to be greater than the width of the palate. The frontal bones, whose anterior branches are much separated, in order that they may embrace the aperture of the nostrils and form the walls of the orbits, each being off an oblique postorbital apophysis. The cheek-bone extends throughout the lower half of the orbit on the orbital apophysis of the maxillary bone, and thus borders the whole of the orbit anteriorly; it gives off a postorbital intermaxillary apophysis. A bony laminal bone is set in at the posterior angle between the frontal, the jugal, and the maxillary, which intervenes at this point between the lacrimal and the jugal bones. A little lower down, in a depression, is pierced the large suborbital bone, which is thus joined to the edge of the orbit, and cannot give place to any canal. The dental part of the maxillary is more inward than the orbit, so that the interior part of the wall of this cavity is formed by a flat advancement of that bone. The zygomatic apophysis of the temporal bone is thicker than in any other animal, but the rest of the bone is moderate; it contributes to form the sides of the occipital crest, and leaves above, between it and the superior and lateral occipital, a space which permits the petrous bone to be turned, the base of the skull being thus placed in a plane running in a nearly parallel direction, and do not unite in a single line, as in the greater part of the Carnivora. In the adult there is only a single unequal parietal bone, which enters largely into the temple; but in the fetus there are a series of small bones, separated by a connective tissue, which four bones however speedily unite, not only with each other, but, what is singular, with the upper occipital, even before the other parts of the occipital are united. The place of the occipital is thus carried from before backwards, and from above downwards, and the occipital crest makes an obtuse angle; there is no vestige of a mastoid apophysis. Below, the intermaxillaries form the point of the muzzle, occupying nearly the fourth of the palate, and surrounding a large incisive hole, which is single, because they have no internal apophysis. Very young Manates have a small tooth in each of their

* Balaenoptera

† Too near to Physeter.

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intermaxillaries, thus completing, Cuvier observes, their analogy with the *Dugong*. He observed this in the fetus, but he remarks that the tooth disappears at a very early period. The jaws commence a little behind the sub- 

orbial hole, which, from the disposition of the orbits, is found nearly at their level. The palatine bones advance in row, and oblique pro- 

ceed to unite with the lower boundary of the palate, and contribute to the formation of two large pterygoid wings, whose body is in other respects almost entirely sphenoidal, and does not separate itself from the body of the posterior sphenoid even in the fetus. The temporal also of the sphenoid remain distinct much longer.

The palatine bone shows itself in the temple by a narrow tongue-shaped process, between the maxillary on one side and the anterior sphenoid and the frontal on the other; but its continuity is partially hidden by the dental portion of the maxilla, with which it is continued backward to the wing of the sphenoid, which it touches without articulation. The anterior sphenoid also only shows itself in the temple by a narrow tongue-shaped process, but much shorter than that of the palatine. It does not reach the 

posterior bone, and the orbital wing of the sphenoid touches the frontal. The body of the basi-sphenoid and of the two sphenoids are conjoined with each other and with the cribriform plate of the ethmoidal bone, considerably before the basi-sphenoid unites with the ethmoidal ossicles. The area of the section of the cranium is nearly half of that of the face; it is singularly high, especially before, in proportion to its length. The frontal bones are there nearly vertical; the cribriform plates are found below the anterior surface; they are small, not much pierced with holes, and nearly sunk. The crista galli is prolonged more backwards than they are. There is no sella; the whole base is united; the median fossa hardly depressed. The analogous hole of the sphen-palatine is large, and entirely in the palatine bone. The palate, in particular, is prolonged backward to the form of a canal; the sphen-orbital, which comprises also the ro-

tundum, is rather large and of oval form; the foramen ovale is a notch of the border of the posterior sphenoid, completed by the tympanic bone; the conoidoidean is very small, and it is united at the notch of the lateral orbital canal. The articulation of the lower jaw is formed by nearly flat surfaces, as in all the *Herbivora*. The ascen-
ding ramus is very wide, and its posterior angle rounded. The coronoide apophysis is directed forwards, and truncated nearly into a hatchet-shape. The region of the symphysis is thick and elongated anteriorly. The whole portion that supports the gum is perforated with small holes. The holes for the exit of the lower maxillary are very large. The lateral and dental portions of the lower jaw are very large and rounded.

Cuvier then points out the modifications necessary to convert the cranium of an ordinary quadruped, a ruminant for example, into that of a manatee, and gives an elaborate description of the changes that have taken place in the face of the latter. The limits do not permit us to follow, but which will be found in the *Ossae mena Fossiles*. This is the bone which was formerly considered a specific against diseases of the urinary passages and against hemorrhages. It will be necessary here to observe that Camper denied the existence of the semicircular canals in the manatee, as well as in the whales generally, but with very small ground for the denial, according to Cuvier, who states that they are only excessively delicate.

The shoulder-blade is nearly semi-elliptical; its lower line being almost straight and answering to the great axis of the ellipse: the spine occupies only the anterior half of the bone. Its greatest projection is near its root; it is prolonged forwards into a pointed acron which ascends a little obliquely, and which has the air of terminating by an articular facet. There are no clavicles. A strong blunt tubercle occupies the place of the coracoid process. The humeral surface is a little higher than it is wide, and very concave. The upper part of the humerus is also very convex; its external tuberosity is very projecting. The bicipital groove is not deep, but there remains a deep canal between the internal tuberosity and the articular head; the deltoidean crest is but little marked. The lower head is a rather oblique simple pulley, ascending at the internal edge. Its width is not greater than its antero-posterior diameter. The internal condyle projects much more than the other backwards. The ulna and radius, which are rather short in proportion to their stoutess, and still more so with reference to the size of the animal, are joined together by their two extremities. Their upper articulation corresponds to the pulley of the humerus; the head of the radius is wider than it is high, and, even when not conjoined, is incapable of executing rotation; in which circumstance the manatee differs still more widely from the seals, in approximate itself to the *Herbivora*. The radius has, below, at its external surface, two pointed crests. There are only six carpal bones; the pisiform bone is wanting, and the trapezium and trapezoid are united into a single bone, which is articulated at once with the metacarpal bone of the thumb and of the fore-finger. The analogue of the os magnum responds to those of the fore and middle fingers. The unciniform bone responds to the middle, ring, and little fingers, which last articulates itself at the same time with the cuneiform bone of the first row.

Each of these bones has also in the manatee its particular character. The pisiform bone, Cuvier observes, is also wanting in the *Dolphins* and is very small in the *Seals* and *Bloats*, whilst it is very long in the animals which make much use of their fore-feet for seizing or progression. The metacarpal bones are flat above, and carinated below; that of the thumb, which has no phalanges to support, terminates in a point; the others are enlarged at their lower extremity. That of the little finger is longer and most enlarged of all. The ring finger, on the contrary, is that which has the longest phalanges, but those of the little finger are flatter and wider. All the articular surfaces of the phalanges are rather full, and must possess but little mobility.

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vertebrae of the tail are very large, especially in the first, but the spinous processes are inconsiderable, which accords, Cuvier remarks, with the depressed form of the tail-fin to prove that the manatee swims by a vertical movement of the tail. The ribs are similarly stout and thick; their two edges are rounded, and they are as convex internally as externally. Cuvier states that he knows of no other animal that has ribs of this form. The two first pairs of these ribs only unite themselves with the sternum by means of cartilages; the following others and between the same vertebra, to the transverse apophysis of which they are articulated. The ribs are not nearly so stout as in the Manatee, but, notwithstanding, the first are still very thick, and have their edges blunt. After the eighteenth dorsal vertebra, the ribs degenerate into the same twine whose spinous apophyses diminish progressively. In the lumbar vertebrae the transverse apophyses are very long; afterwards they diminish by degrees on the sides of the tail, and again become rather longer at its extremity, apparently for the support of the tail-fin. It would seem that the three first only belong to the loins. The fourth has towards its extremity a facet, which is probably destined for the attachment of the pelvic bones, which last and are directed upwards, its being a large oval, as in the Manatee of Senegal. The whole skull, and particularly the frontal bones, are for the same reason much shorter in proportion than in the Manatee. The branches of the frontal bone which form the upper part of the orbit are more delicate and more rugose. The maxillary portion which serves as a floor for the orbit is narrower; the jugal bone, in turning to form the anterior and inferior edge of the orbit, is more compressed and directed more downwards. There is also a lachrymal bone in the anterior angle, more considerable than in the Manatee, but equally without any hole. The zygomatic apophyses of the temporal bone is more delicate and more compressed. The connections of the bones of the cranium are the same, but at the inferior surface the basilar bone is united with the lateral capitula, rather than with the posterior sphenoid.

The enormous development of the intermaxillary bones of the Dugong carries up the aperture of the bony nostrils much higher than in the Manatee, and it is situated at the superior part of the head in the thirtieth of its length and directed upwards, its form being a large oval, as in the Manatee of Senegal. The whole skull, and particularly the frontal bones, are for the same reason much shorter in proportion than in the Manatee. The branches of the frontal bone which form the upper part of the orbit are more delicate and more rugose. The maxillary portion which serves as a floor for the orbit is narrower; the jugal bone, in turning to form the anterior and inferior edge of the orbit, is more compressed and directed more downwards. There is also a lachrymal bone in the anterior angle, more considerable than in the Manatee, but equally without any hole. The zygomatic processes of the temporal bone is more delicate and more compressed. The connections of the bones of the cranium are the same, but at the inferior surface the basilar bone is united with the lateral capitula, rather than with the posterior sphenoid.

A very great solution of continuity is seen in the bottom of the orbit and of the temple, and establishes in the skeleton an extensive communication between these two fossae, and that of the nostrils; it is intercepted between the maxillary, the frontal, the anterior sphenoid, and the palatine bones. The continuity of the temporal portion of the palate with the rest of the bone is not here concealed, as in the Manatee by a production of the basilar bone. The occiput is narrower and its crest less marked than in the Manatee; the frame of the tympanum is also narrower and more delicate, but the bone of the ear is disposed in the same way, and is let in between the same bones. There also remains in the skull a large empty space between that bone, the basilar, and the anterior sphenoid. Within the cranium there is no bony tentorium; the cribiform fossa is reduced to two simple depressions very much separated from each other, and which terminate anteriorly by two or three small holes. There is no sella Turcica. The optic aperture is a long narrow canal. The lower jaw is of a height corresponding with the curvature and length of the intermaxillary bones. This part shows in the adult the remains of three or four alveoli on each side.

The atlas is very similar to that of the Manatee; the axis the same. The five other cervical vertebrae are very delicate, but not conjoined. There are eighteen dorsal vertebrae, the spinous apophyses of which are arranged nearly in a straight line. Counting from the ninth, the ribs do not attach themselves to the same vertebra, to the transverse apophysis of which they are articulated. The ribs are not nearly so stout as in the Manatee, but, notwithstanding, the first are still very thick, and have their edges blunt. After the eighteenth dorsal vertebra, the ribs degenerate into the same twine whose spinous apophyses diminish progressively. In the lumbar vertebrae the transverse apophyses are very long; afterwards they diminish by degrees on the sides of the tail, and again become rather longer at its extremity, apparently for the support of the tail-fin. It would seem that the three first only belong to the loins. The fourth has towards its extremity a facet, which is probably destined for the attachment of the pelvic bones, which last and are directed upwards, its being a large oval, as in the Manatee of Senegal. The whole skull, and particularly the frontal bones, are for the same reason much shorter in proportion than in the Manatee. The branches of the frontal bone which form the upper part of the orbit are more delicate and more rugose. The maxillary portion which serves as a floor for the orbit is narrower; the jugal bone, in turning to form the anterior and inferior edge of the orbit, is more compressed and directed more downwards. There is also a lachrymal bone in the anterior angle, more considerable than in the Manatee, but equally without any hole. The zygomatic processes of the temporal bone is more delicate and more compressed. The connections of the bones of the cranium are the same, but at the inferior surface the basilar bone is united with the lateral capitula, rather than with the posterior sphenoid.
With regard to the rudimental pelvic bones in the Dugong, he remarks that in the true Cetacea the parts analogous to the ischia are alone present, and that they serve a similar purpose to that in the Dugong.

**Zoophagous Cetaceans.**

Dolphins.

The skull in the Dolphins is very much elevated, very short, and very convex behind. The occipital crest surrounds the top of the head, and descends on each side on the middle of the temporal bones, which are directed much more backward than the frontal. The mandibular notch is placed behind the posterior, the frontal, and the internal pterygoid apophysis; but the great peculiariy is the form of the back nostrils. The maxillaries being prolonged into a flattened muzzel, and the teeth terminating in front, the base of the floor nor on the anterior or lateral walls of that cavity, but at its ceiling, as is also the jugal bone: it completes the inner border of this ceiling. From the entire posterior contour of the lower surface or palatine of these bones, the maxillary bones rise a sort of quadrangular pyramid, whose base is traversed vertically by the nostrils, and in which the rest of the space is hollow, or contain'd between two laminæ open behind. These form a sort of double walls which surround the posterior aperture of the nostrils. They are composed of the palatines and the pterygoid internal apophyses. Each palate is folded back on itself in an irregular ring, to form the base of this double wall, and the ceiling is completed by the maxillary, to which it is articulated. The internal pterygoid apophysis is only return'd in the form of S. One of its curvatures articulates itself externally to the palate to prolong the lower and external wall; the other unites to the other arch of the palate, and afterwards continues on the anterior sphenoid to articulate itself to the vomer, and thus complete the internal part of this entourage of the back nostril; whence it results that the entire border of the back nostril, except the vomer, belongs, as in the Ant-eaters, to the internal pterygoid apophysis. The great sinus intercepted between the end of the orbit and sphenoida in the dolphin: this internal pterygoid always remains distinct. The posterior sphenoid is conjointed with the basilar much sooner than to the anterior sphenoid: Cuvier even found it conjointed in some fætuses before any of the other bones. This nearly absolute conjointment of the bases has, Cuvier observes, much changed the direction of the holes. In place of the incising hole there is a long canal which proceeds between the two maxillaries and the two intermaxillaries, from the end of the muzzle to the nostrils, near which it bifurcates. The suborbital hole is to be sought in the ceiling of the orbit, where it represents a cavity open below, from which proceed in different directions canals which go to open on the superior surface of the maxillaries and intermaxillaries, not below, but above and opposite to the orbit. Cuvier could find neither lachrymal bone nor hole. In a hollow in front of orbit, between the maxillary, the vomer, and a point of palatine bone, is a small hole, which ascends in the and represents the spheno-palatine. To remove the pterygo-palatine, Cuvier could only perceive on the junction of the palatine to the maxillary, which enters the sinus placed on posterior nostrils. The optic hole is most anterior sphenoid, as ordinarily. The union between the two sphenoids also perforates the round hole. There is an oval hole and more internally in the same vessel. An aperture between the occipital, the basilar, and the
passage to the nerves of the ear to go to the petrous bone. In front of it, and very near, is the carotid bone hole. In the basioccipital bone, and in a notch of the borders of this vault of the ear, is the condyloid hole, which is very small. It is the posterior border of this vault which occupies the place of the mastoid apophysis.

Internally the cerebral cavity is very remarkable, inasmuch as its height surpasses its length. The floor is very concave and the base is but slightly marked. The cerebellar fossae are the most hollowed; there is often a very projecting bony tentorium in its middle; the falx is always bony backward, but it has no crest, and some small holes are scarcely perceptible in the cribiform plate. The petrosal and tympanic bones are not joined to the cranium by any suture, and are not even enclosed, but are sur-

The skull of Porpoises.

The common Dolphin the seven cervical vertebrae are united in a single body, and so are they in the Porpoises; but this is not universally the case, for in the Dolphin of the Ganges, for instance, the cervical vertebrae are as distinct as in any quadruped. But where they are ankylosed, as in the Pelagic or Deep-sea species of Dipnoi, the atlas is entirely developed, and the axis is sufficiently strong; transverse, conic apophyses. The head of the axis is very delicate; but its spinous apophysis, ankylosed to the atlas, is also well marked. The four suc-

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lower jaw has not the symphysis longer than in the ordinary species of the dolphins.

The seven cervical vertebrae are all ankylosed together; there are thirty-eight other vertebrae, nine of which carry the ribs. At the twenty-second the V-shaped bones which characterize the first caudal commences, so that seventeen caudal vertebrae may be counted. The six of these V-shaped bones; and the superior spinous apophyses cease on the ninth caudal. The five first ribs only are articulated to the sternum, and there are only four false ribs on each side. The sternum is composed of three bones: the first square, notched in front and behind; the second square also, and notched in front; the third oblong and notched behind.

The shoulder-blade has the spiral border more extended in proportion and more rectilinear than in the dolphins, the anterior angles more pointed, the acromion column is in part also oblique downwards, and the coracoid process a little in the opposite direction. The bones of the arm and fore-arms are a little less shortened than in the dolphins. (Oseous Passilies.)

Cachalot.

The skull of a Cachalot bears a nearer resemblance to that of the Dolphins than to that of any other cetaceans. The immense muzzle, notwithstanding its prodigious extent, is, like that of the dolphin, formed by the maxillaries on the sides, the nasals posteriorly, and the vomer on that line. The intermaxillaries reach beyond the other bones to form the anterior point; they ascend on the two sides of the nostrils and the nasal bones, and raise themselves to form that species of wall which elevates itself particularly and circularly on the back of the head, but that of the right side is carried higher than that of the left; the vomer shows itself between them in considerable width, especially at the upper part; it is hollowed into a semicircular channel throughout its depth. The nostrils are pierced at the foot of this sort of wall at the root of the vomer, and between the raised and ascending parts of the two intermaxillaries. Their direction is oblique from below upwards, and from behind forwards. They are excessively uneven, and that on the right is a fourth of the size of that on the left. The nasal bones are also very unequal: both ascend between the intermaxillaries against the foot of the semicircular wall which is raised upon the enunium, but they only rise to the level of the left intermaxillary. The right nasal bone is not only larger than the other, but it also descends lower between the two nostrils, articulating itself upon the root of the vomer, and giving to that part an irregular crest which reposes a little obliquely on the left nostril, which, as before observed, is the left nostril.

The direction of the vomer and amplitude of the left nostril indicate a direction of the membranous canal of the nostrils and the whole spouting apparatus towards the same side, and explain, Cuvier observes, the fact observed by astronomers, namely, that the cachalot throw their spoutings towards the left side.

The maxillaries do not join each other in front of the semicircular wall; and leave exposed between them an irregular and considerable part of the frontal bone, which goes behind them, and, directing itself laterally, proceeds to form, as in the dolphins, the principal part of the ceiling of the orbit; the maxillary makes its anterior angle, in front of which the border of the maxillary has a deep notch, and at its upper surface, opposite to the notch, is the post-orbital fossa which occupies the place of the suborbital, but which, Cuvier remarks, should here be called supra-orbital. The posterior angle of the orbit is occupied by the point of the zygomatic apophysis of the temporal bone, but it does not join the post-orbital sinus of the frontal bone, so that the edge of the orbit is open at this point. The lower part of the orbit is formed by a stout and cylindrical jugal bone, whose anterior part dilates itself into an oval plate with a point which projects beyond the orbit in the temple; the temporal fossa is very deep, rounded, but not distinguishable by a crest from the rest of the occiput: a little of the parietal bone is perceptible between the temporal and the frontal bones. The squamous portion of the temporal bone is in the shape of a stout and short cone; proceeding to the orbit, it forms the arch, as in the dolphins. The occipital bone is vertical and forms the whole posterior surface of the circular wall which surrounds the skull behind.

The skull and teeth of Narwhal, seen from below. (Owen.)

Hyperodones.

The skull in this genus differs almost entirely in form from those belonging to the dolphins. From the maxillaries, which are pointed in front and widened towards the base of the muzzle, rises on each of their lateral borders a large vertical crest, rounded above, descending obliquely forwards and more rapidly backwards, where it falls again nearly above the postorbital apophysis. Still more backwards, the maxillary bone, continuing to cover the frontal bone, ascends vertically with it and with the occipital, in front on the back part of the head a transverse occipital crest, which is very elevated and very thick: so that on the skull of the animal there are three of these great crests; the occipital crest behind, and the two maxillary crests on the sides, which are separated from the first by a wide and deep notch. They do not approximate above nor do they form a vault, as in the Dolphin of the Ganges, but simply a sort of lateral walls. The intermaxillaries, placed as ordinarily between the maxillaries, ascend with them to the nostrils, and passing by the side of them, raise themselves above so that they take part in the formation of the posterior crest elevated upon the occiput. The two nasal bones, which, as well as the nostrils, are very unequal, are placed at the anterior surface of this occipital crest, and are raised to its summit. In other respects the connections of the bones are nearly as the same in the dolphins.

The zygomatic apophysis of the temporal bone is thick, without being as long as in the Dolphin of the Ganges; the orbit is as wide as in the ordinary dolphins, and bordered in like manner below by a slender stem given off by the jugal bone. The parietal bones show themselves but very little in the temporal fossa, which is itself not much extended in height. Below, the palate is slightly arched, indicating an approximation to the Baleen. The lateral furrows observable in the common dolphin are absent. The pterygoideans occupy a very great length in the back-nostrils and much diminish the portion which the palatines bones fill in front. The vomer shows itself at two points of the lower surface, between the pterygoideans and the palatines, and between the maxillaries and intermaxillaries. The occiput is higher than it is wide. The
pital hole is nearly at the lower third of its height. The lower border of the occipital bone is divided on each side by a notch into two lobes, the external of which represents the mastoid apophysis.

The lower part of the skull, allowing for the difference of proportion of the parts, much resembles the lower portion of that of the dolphins. The region behind the nostrils is very much shortened in comparison of that which is anterior to them, and of which the enormous muzzle forms the greatest portion. The result of this conformation is that the basiary and posterior sphenoid are very short; that the anterior sphenoid, as in the large-muzzled dolphins, only shows itself below in a notch of the vomer, and appears very little towards the temple between the palate, the pterygoidean, and the temporal arch of the posterior sphenoid; and that the pterygoideans extend on their lateral and posterior part, nearly to the posterior portion of the basiary bone. The jugal bone on its anterior part lines below a great portion of the vault of the orbit, and proceeds to touch, behind, the points of the two sphenoideans. Their anterior border is not double, as in the dolphins. The bone of the ear bears a great resemblance to that of the dolphins, but the tympanic bone is less elongated and less lobated backwards.

Of the cervical vertebrae of the Cachalot, the atlas alone is distinct: the six others are ankylosed into a single mass by the bodies and spinous apophyses; but the number may be made out by the sides, where very delicate laminæ interpose between the holes where the nerves pass out. There are fourteen pairs of ribs and fourteen dorsal vertebrae (perhaps a fifteenth), and thirty-five others—sixty in all. The dorsal have their transverse apophyses turned inwards, and embrace the posterior, which look outwards. The spinous processes are less elevated and wide from before backwards. The two last carry the ribs only on the extremity of the transverse apophysis, and not on a facet of the body. On the succeeding vertebrae the spinous apophyses rise, become oblique, and wider at their summit than at their base. The articulars ascend gradually to their anterior borders, as in the dolphins: the spinous apophyses remain in the same plane, and their summit on the tail, and finally disappear. The spinous apophyses disappear also on the last caudal vertebra. The transverse apophyses are, at first, simple tubercles of the articular apophyses: they do not take the form of dist, which is less than those of the articulars, which form more than the spinous; and, afterwards continue on the lumbar and caudal, but always remaining of moderate length, and not dilating at their extremity. The lower part of the body of the vertebra, counting from the fourth lumbar, is strongly constricted. The notched bones do not commence before the twenty-first after the dorsal vertebrae. They are at first rather long, and more so than the spinous apophyses to which they correspond; but afterwards they are a little shortened. The vertebrae which carry them have their greater articulars divided into two truncate ridges, each at the two extremities, so as to form facets for the V-shaped bones, which always articulate between two vertebrae. The caudal vertebrae still remain very large up to the six or seven last, which diminish rapidly, losing their distinct eminences; thus the greatest portion of the spine is nearly much of a size.

The shoulder-blade is coneae externally, convex on the side of the ribs, and narrower than in the other cetaceans: its spinal border is not two-thirds of its length. The anterior border becomes double below the middle of its height, and gives off from its external ridge a great acromion, more projecting anteriorly than the shoulder-blade is at this point, and enlarged at its extremity. The internal border goes off near the articular head a concoid apophysis, which projects less than the acromion, and terminates in a point. The humerus is very short and stout, and has at its anterior border a crest, terminated towards the lower part by a hook which represents the deltoid crest. The neck is short before the humerus, even to the epiphysis of this last is united. The olearian apophyses project very much, and curve towards the wrist. (Cetacea Pinni.)

Balænidae, or Whalebone Whales.

Rorqual (Balaenoptera).—The skull of the Rorqual is more approximated to that of the dolphins than the skull of the Balæna properly so called. The immense maxillary bones are disposed below, in form of a reversed roof or a keel, to the two sides of which the baleen, or whalebone, is attached. The vomer is situated between these, at the mesial line of the keel. Above, the two intermaxillaries, placed parallelly between the two maxillaries, leave between them a vacant space, which is continued above, rather backwards, with the very large aperture of the nostrils, which is in the form of an elongated oval, and, contrary to the other cetaceans, preserves, as in the whole of the Balæna, a symmetrical form. The nasal bones, which are short, but notched or festooned anteriorly, and not in form of tubercles, form the upper border of the aperture. The maxillary does not cover the frontal bone, except by a narrow apophysis on the sides of the nasal bones. The whole portion of the frontal bone which goes on each side to form the orbit is exposed, but the maxillary only cover the temporal part, and is attached to the sides of the apophysis of the maxillary bone, which shows itself between the frontal and the bones of the nose. The occipital bone advances between them, and covers the middle of the frontal to near the base of the nose; so that at the base of the nose the frontal does not show itself externally. There are two temporal crests projecting greatly forwards, commencing at the sides of the nose, and between which the skull is flat, or even slightly con cave, and descends slowly towards the occipital hole, which is at the extremity of this plane. The occipital crest comes near...
the base of the nasal bones, traversing from one temporal bone to the other. On the middle of this occipital surface is a slight projecting longitudinal ridge. The temporal bone is not dilated at its extremity, as in the dolphin. The frontal on one side touches the maxillary, and on the other the temporal bones, by its ante- and post-orbital apophyses, and forms the roof of the orbit, which is without being doubled above by the maxillary; but, on the other hand, is below, on its anterior portion, that in front of the orbit, and moreover is bordered there anteriorly by the lateral lamina of the maxillary bone, which is, with reference to this, very much narrowed. In them the rostrum is molded to the transverse apophyses which carry the ribs. There are fourteen dorsal vertebrae and as many pairs of ribs, and thirty-one other vertebrae to the end of the tail—fifty-two in all. The second, third, and fourth ribs only have heads, and the rest seem hardly able to bear the vertebra. The others only reach the extremities of the transverse apophyses, which go on lengthening to the lumbar region. They are longer than they are wide, and dilate at the end, as in the Greenland whale. They thus continue to the thirteenth lumbar, and thence to the dorsal. There is a little ridge on the middle of the back, narrower, but always moderately elevated, on the lumbar region, and shortening by degrees on the tail. They vanish on the twelfth last, and the lumbar portion disappears. The faces of the articular apophyses look inwards as far as the eleventh, where they begin to open outwards. They do not rise, and finally form, towards the fourteenth or fifteen, with the spines (which is always marked), the angle of the twelve to the eighteenth. The French skeleton is attached under the ninth lumbar vertebra. At the eleventh the V-shaped bones commence. The first is still formed of two separate bones. They re-divide again near the hind limbs. The posterior part of the lumbar and caudal vertebrae is hardly marked, as slight cartilage. Commencing from the fifteenth vertebra after the dorsal, the body of each is pierced on both sides, above and below, with a large hole for the vessels. These holes do not diminish on the last caudal, though they are much smaller, and each they represent two cylinders set back to back, pierced in their axis.

The single bone of the sternum was square, deeply forked posteriorly, and with a point at its external border. The shoulder-blade of the Cape Roqual is, Cuvier remarks, entirely different from that of the Balaena; it is wider than it is long, semicircular on the spinal side, with a single angular border, and a single prominence (the acromion) towards the lower third, and a tubercle near the articulation, which is the coracoid apophysis. The humerus is still stouter in proportion than that of the Balaena, but the bones of the for-arm are much more elongated. The fin is also much more pointed. There are only four well-marked fingers, which do not equal the number of the following joints—the index two, the middle and ring finger seven each, and the little finger three; all the fingers are terminated by a cartilaginous dilatation.

The bone of the ear in the Balaena is very much different from that of the Roqual. It may be supposed to be a thickened thickness of the tympanic bone, especially on the internal side. The tympanic bone is a little more closed in front, but leaves between it and the petrous bone on the internal side a little more than the parrot. It is not bilobated but semi-oval. The petrous bone is of very irregular form, and very rugged; it gives off two great and stout apophyses, also very rugged, one of which, posterior and external, is a corresponding apophysis of the little superior, articulated to a corresponding portion of the transverse and lateral apophysis, and the other, anterior and inferior, is articulated by squamous suture with the temporal portion, which descends to furnish articulation of the cervical or the last cervical. The ear-bones in all the cetaceans are four in number, as in the Roqual, so that the lower jawbone rises a little to offer its articular convex surface. This disposition, joined to the absence of a coronoid apophysis, is a form to distinguish it from the lower jaw of the Roqual.

In the Roqual of the Cape, Cuvier found the atlas distinct from the axis; this last is anchored by the upper part of its ring which has no spinous apophysis, with the corresponding part of the third cervical. This last and the four others do not unite; they are of some thickness. The transverse apophyses are double in the third first, as in the axis; one, superior, is given off from the annular portion of the vertebrae from the base of the bone. There are a few others do not unite; they are of some thickness. The transverse apophyses are double in the third first, as in the axis; one, superior, is given off from the annular portion of the vertebrae from the base of the bone.
in the quadrupeds, and the malleus is anchylosed to the frame of the tympanum, which, Cuvier observes, is the more singular, inasmuch as it is not deprived of its muscles.

Cuvier remarks that the skull of the Greenland whale differs more from the Balea of the Cape than the skulls of the Rorquals differ from each other. He points out these differences, which extend, although slightly, to the bones of the ear; and expresses his opinion that they are different species.

In the great Cape Balea, according to Cuvier, the atlas, the axis, and the five other cervical vertebrae are united together by their bodies. All their spinous apophyses are anchylosed into a single crest. The atlas and axis unite besides by their upper transverse apophyses, which are wide and strong; their lower transverse apophyses, which are equally long and strong, are anchylosed to each other and to that of the third, which is more slender. The four next cervicals have only delicate transverse apophyses, of which the third, fourth, and fifth are anchylosed together. The last also has only one upper transverse apophysis, but longer, stronger, free, and directed forwards. Cuvier remarks that this division of the apophyses into upper and lower responds to the two branches separated by a canal, which are seen in those of ordinary mammals. The transverse apophyses of the first dorsal are directed also forwards, and are long and a little stronger than at the last cervical; they commence increasing in bulk, and shortening at the fourth dorsal. The succeeding take a more transverse direction, and are enlarged at the end, to the tenth inclusive. Counting from the eleventh, they again begin to elongate to the twentieth; they then diminish insensibly to the thirty-fourth, where they disappear. They are throughout longer than in the Cachalot, and enlarged towards the end, the contrary of which is manifested in that genus. There are fifteen pairs of ribs; the four last pairs and the two first do not reach the body of the vertebra, and are only attached to its transverse apophysis. The first pair is flattened and extremely wide, especially at the sternal extremity. The three last are slender and short. After the fifteen dorsal vertebrae come twenty-seven others. The V-shaped bones commence between the eleventh and twelfth; they are small compared with those of the Cachalot, and disappear after the twenty-sixth. The eleven or twelve last vertebrae have no longer any prominence. The last of all are nearly quadrangular, and are each pierced with two vertical holes. The spinous apophyses form a tolerably uniform series of moderate height, all inclined forward; they begin diminishing on the tail. The anterior articular apophyses are not elevated, neither are they depressed, and preserve the same dimensions. They widen on the tail where they have no articulation to furnish, and the five or six last, nearly equal to the corresponding spinous apophyses, form with them on their vertebra a frilled prominence.

The single bone of the sternum was oblong, widest in front, and carried on each side an articular facet for a rib.

The shoulder-blade is nearly flat; one can scarcely perceive a slight concave curvature; it is nearly fan-shaped, and less wide than high. Its anterior border is simple, and has only a single projecting apophysis, which, from its position, is probably the acromion. Its articular head is much wider in proportion than in the Cachalot. The humerus is stout and short, scarcely twice as long as it is thick. Its tuberosity does not reach beyond the head in front; this last is hemispherical, and nearly parallel to the axis. The lower head is divided into two slightly inclined planes by the ulna and radius compressed; the ulna is the narrowest, especially in its middle. Its upper head is slightly oblique at its axis, and the olecranon ascends a little, instead of recurving into a hook, as in the Cachalot. The radius enlarges below, so as to be twice as wide as its length; above, it is not more than one third. There are four carpal bones in the first row, of which the ulnar bone, which responds to the pisiform, forms a projection externally; there are only three in the second. The metatarsals are in length only double their width. The thumb has two phalanges of the ring-finger three, and the little finger three; and all are terminated by a cartilaginous dilatation. A wide and short fin obliquely rounded is the result. (Osseous Fossilies.)

The pelvis in the Cetaceans is, as we have seen, only rudimentary, but it may be necessary here to give a summary of the modification of the bones and their connection with the skeleton in the different groups.

In the Dugong it consists of two pairs of bones joined two and two, and end to end by a cartilage: to the vertebra this apparatus is attached by a cartilage.

The construction of this part varies in the true Zoophagous Cetaceans. Two small long bones lodged in the flesh, one on each side of the anus, form the pelvic radius or Whalesbone in the Dolphins. In the great Whales, the Mysticete, or Whalebone Whale, for example, at the extremity of each of the bones regarded by comparative anatomists as the second, which is smaller and curved, is articulated. The convexity of this last bone is external, and may be considered a pubis or ischium.
Phytophagous Cetacea.—The teeth (molars) of the Manatees are ridged on the inner side, but the root distinct from the crown: here the resemblance to the pachyderms (Tapir and Hippopotamus, for instance) is very strong. The molars of the Dugongs are elliptical without true lags, and with two slight furrows on the unworn crown, which distinguishes them from the corresponding parts of the Manatees. In the Dugongs the teeth are not so large, nor is the anterior cornua usually developed. The Rynites there are no molars; but there is in lieu of them a horny plate in the middle of each jaw. The tongue is short, and can hardly be endowed with much motion. The form of the os hyoides is simple: ankylosis between the body and posterior cornua is not uncommon, but the latter send no ligament to the thyroid cartilage. The anterior cornua remain generally cartilaginous, and are the medium of union between the body or basal-hyal, and the large and long styloid processes.

Professor Owen remarks, that the position of the larynx is chiefly defended, during the submariu mastication of the vegetable food of the Dugong, by the extreme constriction of the fauces aperture, which resembles that of the Cetacea. No pyramidal larynx traverses it, as in the true Cetacea. Two large parotid glands are situated immediately behind the large ascending ramus of the lower jaw. A thick layer of simple follicular glands is developed above the membrane of the palate, and a glandular stratum is situated between the mucous and muscular coats. The former only is lined with a mucosa, but the latter consists of a serous membrane, and an outer connective tissue plane. The stomach, the esophageal duct, and the large caecum are provided with a mucous lining, similar to that with which the stomach is lined in the Piked and Whalebone Whales. It is lined by a single, embryonal epithelium. Professor Owen states that a similar but more developed glandular structure is present in the oesophagus of the Ray. He then observes, that the stomach of the Dugong presents, as Sir Ernest Hume has justly observed, one of the peculiarities of the whale tribe, the presence of a second stomach, the stomach of the Hippopotamus, and the Beaver: like that of the first, it is divided into distinct compartments; like the second and third, it has pouches superadded to and communicating with it; and, like the third, it is provided with a remarkable, glairy, mucus secreting apparatus near each orifice. These modifications, the Professor remarks, obviously harmonize with the difficult digestibility and low-organized matter of the food of the Dugong. 'Yet,' says he, 'it is a fact that would not have been a priori expected, that in the carnivorous Cetacea the stomach is much more simple, and is larger in proportion to the dimensions of the body, than in the herbivorous species, and presents a closer resemblance to the ruminant stomach; it is divided, for example, into a greater number of receptacles, and has the first cavity, like the ruminants, lined with cuticle, while in the Dugong, on the contrary, the cavity is everywhere covered with a smooth mucus membrane. After a luminous detailed account of the stomach, Professor Owen observes, that 'in the primitive form of the stomach, the whole surface of the wall is covered with a network of small veins and lymphatics. It is interesting, he adds, to find that a corpus collo (the situation and structure of which in the Dugong he describes) is present in the true Cetacea, as the Balaenides, which subsist on animal food of the lowest organized kind. The whole of the alimentary canal and the individual divisions presented by the three specimens having been elaborately detailed, Professor Owen proceeds to point out that the Dugong, with respect to the biliary organs, deviates in a marked degree from the ordinary Cetacea in the presence of a gall bladder and an appendix vermiformis. The last is also seen in the Manatees. Professor Daubenton also found in the Manatees; but the presence of the gall-bladder is not, the Professor observes, constant in the herbivorous Cetacea, for in the Northern Manatee, according to Steller, it is wanting, and its absence seems to be common in the class of animals of the Genus Dugong, which would admit the five fingers united. The secretion of the pancreas was carried by to thirty ducts, each about two lines in diameter, to a very wide common excretory canal, which terminates below, but on the same prominence with the esophageal duct; at a much greater relative distance from the pylorus than in the true Cetacea. In one of the Dugongs dissected by Professor Owen were two small accessory excretory segments in addition to the larger rounded one, but in the other specimens the last alone was present. (Zool. Proc. 1836.)

Zoophagous Cetacea. The teeth of the Dolphins are, generally, simple and conical or compressed. They are present in both jaws; their number varies, and they are not always perfectly fitted. The eyes are large, and the nostrils placed in the upper jaw only. Some of the Cachalots are simple, of a long ovoid recurved shape, and placed in the lower jaw only. The Mysticetes, or Whalebone Whales, are without true teeth; in lieu of which, transverse horn-like plates of baleen, or whalebone, as it is commonly called, grow from the edge of the plates on their internal edges are fringed with loose bear, and among these the small marine animals which form their food are entangled as in the meshes of a net.

The stomachs of the Zoophagous Cetacea are very complicated; these in various species and in different individuals of the same species, has been variously given by different authors. Some have stated the number in the common Dolphin and Porpoise at three, others at four, others at five, others at six. M. F. Cuvier considers it as certain that there are six stomachs, which is in agreement with the manner in which the organ is viewed. Professor Owen was unable to distinguish more than four compartments in the stomach of the Porpoise. In general the spouting whales have no cacum; but a trace of it has been found in the Platanist, and it actually exists in the Piked and Whalebone Whales.

John Hunter pointed out the considerable degree of uniformity present in the liver of this tribe, observing that in shape it resembles that of man, but that it is not so large, that at the base of the liver is not so rounded, not so firm in the texture. The right lobe is the largest and thickest. There is no gall-bladder. The same distinguished comparative anatomist describes the pancreas as very long, thin, and having its left end attached to the lesser side of the first part of the duodenum. He observes, that it extends across the spine of the spine of the mesentery, and near to the pylorus joins the hollow curve of the duodenum, along which it is continued and adheres to the intestine, the duct entering this layer near the termination of the gut. In the Piked Whales the liver is a single and small; in the Porpoise it is subdivided into several distinct portions.

The following preparations, illustrative of the teeth and other digestive organs of the Cetacea, will be found in the Physiological Section of the First Report of the Royal Society of Surgeons in London: Nos. 319, 320, 321, are transverse and perpendicular sections of plates of whalebone, with the vascular basis or gum, &c., of the Piked Whale (Balaena boops, Linn.), No. 322 is a perpendicular section of a single plate of whalebone, in the Piked Whale, showing the outer and inner layers, &c. No. 323 is a perpendicular section of several plates of whalebone, with the intermediate substance and vascular nidi, from the upper jaw of a young Piked Whale. The plates are fringed with very small, very rigid hairs or bristles, which explains the passage in Aristotle (Hist. Anim. ill. 121), who, speaking of the Great Whale (mediumc, or, as Bekker reads it, δ μεθεν κρακάω), says: 'The Mysticetes have no teeth in its mouth, but have as hogs' bristles.' Nos. 324, 325 A, and 326, are sections of the jaws of the Porpoise, showing the teeth, their roots, gums, &c. Nos. 327, 328, are sections of the lower jaw, with teeth and sections of them of Delphinus tursio, Fabr. (small Bottle-nose Whale of J. Hunter), No. 329 is a section of the cavity of the stomach of the Piked Whale. No. 573 is a portion of the cavity of the stomach of some cetaceous animal. Nos. 574 and 575 are portions of the first and second cavities of the stomach of a Porpoise. Nos. 576, 577, 578, are portions of the cavity of the stomach of a Piked Whale. No. 579 is the injected stomach of a Porpoise, showing various cavities, &c. No. 730 is a portion of the rectum of a Porpoise injected. Nos. 740 and 741 are longitudinal sections of the termination of the intestinal canal of Delphinus tursio, Fabr., the last showing the large longitudinal and small transverse rugos of the lining membrane. No. 742 is a longitudinal section of the commencement of the rectum of Delphinus Boletus, Cuv. and No. 743 is a longitudinal section of the rectum and anus of the Piked Whale (Balaena boops, Linn.), showing the zigzag rugos, &c. No.
823 is a portion of the pancreas, of the duodenum, and of the hepatic duct of the same species; and No. 624 is a portion of the lining membrane of the hepatic duct of the same whale.

Circulating System.

Phylophagous Cetaceans.—The three Dugongs described by Professor Owen presented the same remarkable expanse of separation of the two ventricles of the heart, described by Sir Everard Home and Sir Stamford Raffles in the individuals examined by them, and observed by Rippell in the Dugong of the Red Sea (Halocere tabernacul.). Daubenton appears to be the first who noticed this condition of the heart in the herbivorous Cetaceans (from the genus Helocereus, and M.). Steller also described it in the genus which bears his name; but in that animal the apical cleft of the heart extended upwards only one-third of the way towards the base, whereas in the Dugong it reaches half-way towards the base.

Professor Owen found the foramen ovale completely closed, and the ductus arteriosus reduced to a thick ligamentous chord, permeable for a short distance by an eye-probe from the aorta, where a crescentic slit still represented the original communication. He states that in the smoothness and evenness of their exterior and their general form the aorticles of the Dugong resemble those of the turtle (Chelone), and that the appendice can hardly be said to exist in the right aorticle larger than the left. The primary branches from the arches of the aorta correspond in each specimen with Sir Everard Home's figure and description. There was only one superior cava, not two, as in the elephant; and the pulmonary veins terminated in the left auricle by a common trunk an inch in length.

As no mention had been made in the anatomical descriptions of the herbivorous cetaceans by Daubenton, Steller, Cuvier, Raffles, and Home, respecting the existence or otherwise of the extraordinary inferior and intervertebral arterial plexuses present in the true Cetacean, Professor Owen carefully followed out this part of the dissection, but could detect no trace of this very striking modification. Here again, he observes, in enunciating a general or fundamental proposition regarding Cuvier's Cetaceans, the herbivorous species must be exceptionally cited apart.

Zoophagous Cetaceans.—Professor Owen remarks that the Carnivorous Cetaceans do not participate in the structure of the heart above described with the Herbivorous species.

The following is John Hunter's description of the heart of the Whale:

"The heart is inclosed in its pericardium, which is attached by a broad surface to the diaphragm, as in the human species. It is composed of two auricles and two ventricles: it is more flat than in the quadruped, and adapted to the shape of the chest. The auricles have more fasciculi, and then pass more across the cavity from side to side than in many other animals; besides, the intercostals all anastomose, and in the left auricle two auricles and two ventricles: it is more flat than in the quadruped, and adapted to the shape of the chest. The auricles have more fasciculi, and then pass more across the cavity from side to side than in many other animals; besides, the intercostals, which are very large, and gives branches to this plexus; and when it has reached the abdomen it sends off, as in the quadruped, the different branches to the viscera and the lumbar arteries, which are likewise very large, in the supply of that vast mass of muscles which forms the tail."

Moreover, Hunter prepared with his own hands the two instructive specimens of the arterial plexiform reservoirs in the Porpoise noticed by Sir Everard Home.

Hunter's description was published in 'Phil. Trans.' 1787, and Professor Owen well observes that M. Brechet could only have known it by extract or reference, or he would have not stated that the structure in question had been seen by him in the whale. He says, "on pourrait être dès lors compté au nombre des faits acquis à la science," for the Professor remarks that he does not find in M. Brechet's paper any essential addition to Hunter's original account, either with respect to the observation of additional facts, or to the physiological inferences deduced from them.

M. von Baer, in his valuable observations on the subdivision of the brachial arteries and on other parts of the vascular system of the porpoise, does not consider it necessary to depreciate the labours of our great anatomist. The arterial plexus of the whales has also been noticed by M. Deaumolins, and by Dr. Barclay, Dr. Knox, and Sir Wm. Jardine.

Dr. Sharpey's Observations on the Anatomy of the Blood-vessels of the Porpoise were read to the British Association for the Advancement of Science, in the same year and one month later than M. Brechet's paper was read to the
French Academy. They only occupy the greatest part of a page in the Society's Report, but are sound.

With regard to the veins, Professor Owen points out that they are remarkable not only for their great capacity, which Hunter noticed, but also for their number and the immenseplexuses which they form in different parts of the body, and above all for the almost total absence of valves. To observe, has given a figure of the extensive venousplexus situated on the membrane investing the poas muscles, and these have recently occupied the attention of Breschet and Von Baer. The inferior and superior veins are not brought into communication by the vena cava, as in other Mammalia; such veins in the usual situation in the chest would have been subject to compression between the arterial plexuses and the lungs. The vena cava are therefore represented by two venous trunks situated in the interior of the vertebral canal, where theyreceive the intercostal and lumbar veins, and finallycommunicate with the superior cava by means of a short single large trunk, which penetrates the paires of the posterior and right side of the chest. Professor Owen concludes this interesting note to Hunter's 'Animal Economy' by clearing up the difficulty, which must have occurred to most ofaccounting for the fact so enormous an animal as the great whale being killed by such puny instruments as the harpoon and lance. The nature and structure of the veins in the cetacea, says the Professor, 'and the pressure of the sea-water at the depths to which they retreat when harpooned, explain the profuse and deadly hemorrhage which follows a wound that in other Mammalia would be by no means fatal.'

The following preparations in the Physiological Series of the Museum of the Royal College of Surgeons illustrate the circulating system in the whales:—No. 925, the appendix of one of the arteries of the Bottlenose Whale (Delphinus Dallisi, Cuv.), showing on a large scale the fleshy bundles, musculi pectorales, which assist in propelling the blood from the heart into the ventricle. No. 926, a large portion of the right auricle of the same whale. No. 927, a portion of the left ventricle of the same whale, showing the mitral valve, aortic-pulmonary orifice, and auriculo-ventricular, which last are seen attached to the ventricular surface of the valves, as well as to their margin. No. 927 A, the heart of a Porpoise (Phocena communis), showing the completely closed foramen ovale, absence of any trace of an Eustachian valve in the right auricle, and ductus arteriosus so obliterated as to admit only the passage of a small bristle. Nos. 132 and 133 (dry preparations), two instructivestripes, injected by Hunter, of the peculiar arterialplexiform reservoirs in the Porpoise.

Phytophagous Cetacea.—Professor Owen states that the peculiar form, structure, and position of the lungs have been so accurately described and figured by Raffles, Home, and Rippell, that he has only to observe the close agreement with these statements which the following specimens present in the three Dugongs dissected by him. Dunbanton and Humboldt, he remarks, describe and figure a precisely similar condition of the respiratory apparatus in the Manatee. Steller, he adds, describes the same extension of the lungs in the Balaenoptera and other Cetacea, though the lungs in the bird, without their fixation in the paires of the chest, so characteristic of that class. Professor Owen is of opinion that the Chelonian reptiles, perhaps, offer a closer resemblance to the herbivorous Cetacea in this respect, and he notices it as a very remarkable, that the lungs larger in the Dugong than in any other mammals. In the carnivorous Cetacea, the air-cells, he observes, are remarkably minute, and the lungs more compactly shaped and lodged in a shorter thorax.

'Existing,' contends Professor Owen, 'as both the herbivorous and carnivorous Cetacea do, under such peculiar circumstances—as air-breathing animals constantly dwelling in an element the access of which to the lungs would be immediately fatal—it might be supposed that the mechanism of the lungs, or entry to the diaphragm, would be similarly modified in all the species, in order to meet the contingencies of their aquatic existence. But we can as little predicate a community of organization in the structure of this part, as of the circulating or digestive system in the Cetacea. For, although the Dolphin present, in fact, the two extremes in the Mammalian class, in the development of the epithlottis, which is one of the chief internal characteristics of that class. In the Balaenoptera and the Delphinus, in particular, it is remarkable for its great length, and in the Dugong it can hardly be said to exist at all.'

Professor Owen, after giving a minute and accurate account of the larynx, thus proceeds:—'Amongst the two almost or all the animals of this order, we have observed that it is those which subsist on the lowest organized animal substance, as the Baleenidae, which approach the nearest to the herbivorous species, in having the additional complexity of the cæcum; and it is interesting to find that the same is the structure of the larynx. The epithlottis and arytenoid cartilages, for example, are relatively shorter in the Balaenoptera than in Delphinus; and, as Mr. Hunter has observed, they are connected together by the membranes of the larynx only at their base; and not wrapped together as in the Dugong, a circumstance so far as the oppos, as in the Dolphins. In the Balaenoptera also, the apices of these cartilages are not expanded, as in the Dolphins, but diminished to an obtuse extremity. These points of resemblance to the condition of the larynx in the Manatee and Manatus, as well as the comparative size of the heart and other organs in the Balaenoptera, is evident in the Humpback Whale, at least in the Balaenoptera, or in the Piked Whale, or in the Humpback, or in the Dugong, we find a single piece, in both of these, as in the Balaenoptera and Balanoptera, published by Professor G. Sandifort, preclude the necessity of further dwelling upon.'

The diaphragm, lungs, bronchi, and trachea present in the Zoophagous Cetacea, secondary modifications, but important differences are exhibited in the nostrils, which serve to conduct the air from the atmosphere to the lungs. The necessity for the act of spouting seems to have led to the obliteration of the organ of smelling, and to the formation of a new organ, the sphenopalatine sinus, which surrounds the nostril and serves for the passage of air. Although this organ has only been observed recently in the Dolphins, it is probable that the apparatus in all the Zoophagous cetacea is the same.

If, says Baron Cuvier, we trace the osseous upwards, we find that when it arrives opposite the pharynx it appears to divide into two passages, one of which is continued onwards to the mouth, while the other is continued for the nose: mucous glands and fleshy fibers surround the last mentioned passage. Some of these are longitudinal, and arise from the

* * * Nieuwe Verhandelingen der Koninklijke Akademie. p. 224, pl. 1—9.
ference of the posterior orifice of the bony nostrils, and descend along that canal to the pharynx and its sides; the others, which are annular, appear to be a continuation of the proper muscles of the pharynx. The larynx rises into this passage in a pyramidal form, and the annular fibres have the power of constricting it. Muscular follicles, which pour out their secretion by conspicuous extrareticular orifices, prevail in this part. When the lining of the nasal passage has reached the vomer, it becomes of a peculiar texture, thin, smooth, and black, is apparently destitute of vessels and nerves, and very dry. A fleshy valve closes the two bony nasal canals at the upper or external orifice. It is formed of two semicircles attached to the anterior edge of that orifice; which it shuts by the agency of a very strong muscle lodged above the intermaxillary bones. To open it, there is a necessity for some foreign body to press against it from below; and when it is closed, it debars all communication between the nasal passages and the cavities above them, which cavities are two large membranous pouches formed by dark mucus skin, and very much wrinkled when empty; but when distended, they become of an oval shape, which in the Porpese is about as large as a common wine-glass. These two pouches lie beneath the integument in front of the nostrils, and communicate with an intermediate space immediately above those nasal organs, whose external orifice is a transverse semilunar slit. Strong fleshy fibres expand and cover the whole upper surface of this apparatus, radiating from the entire circumference of the cranium, uniting above the two pouches, and adapted for compressing them forcibly. Now we will suppose that the cetacean has taken into its mouth water which it wishes to eject: it first sets the tongue and jaws in motion as if it were about to swallow the water; but, shutting its pharynx, it forces the water to ascend into the nasal passages, where the annular fibres above mentioned accelerate its progress till it raises the valves and distends the membranous pouches above. The water, when once in the pouches, can be retained till the animal wishes to spout. When that wish is present, the cetacean closes the valve, and expels the descent of the water into the nasal passages, and forcibly compresses the pouches by means of the muscular expansion which overspreads them. The water, compelled then to escape by the narrow semilunar aperture, is projected to a height which corresponds to the amount of the pressure applied.

Vertical section, exhibiting the tongue, larynx, and nostrils of the Porpese (from the Physiological Series (Mammalia, Chirot.). vol. ii. p. 109.)

In the ease of the Spermaceti Whale, it appears that the animal occupies about a seventh of its time in breathing; and when it rises after long intervals, an enormous column of air must rush into the lungs and aerate a vast quantity of blood for the reservoir described by Hunter. In ordinary mammals, man and the quadrupeds for instance, respiration is momentary. A fleshy valve is inserted at the upper extremity of the snout: in the Whalebone Whales it is double, opening towards the summit of the head, as in the Dolphins, in a crescentic form whose convexity is sometimes anterior and sometimes posterior.

The following preparations illustrate the respiratory system of the Whales, in the Museum of the Royal College of Surgeons:—Nos. 1122, 1133, small portions of the line of a Porpese; No. 1166, the longitudinal section of the head of a Porpese, showing the pyramidal larynx project.ed into the posterior nasal and embraced by the margin of the soft palate, which surround it like a sphincter and cut off all communication between the mouth and nostrils; No. 1157, a longitudinal section of the tongue, pharynx, and larynx of a Porpese; No. 1109, the orhyoid and larynx of a Porpese; No. 1182, for larynx and pharynx of a Dolfinus (Dolphinsurs, Fabr.); both these show the division of the fauces into two passages for the course of the food in defluxion on each side of the pyramidal larynx.

For a very luminous account of the larynx and blow-hole or air-passage in this tribe, see the paper of John Hunter on Whales, above quoted, in Phil. Trans. (vol. 1xxxvii., p. 416), 1789.

Uroptotic System.

Professor Owen observes, that if we were acquainted with the structure of the urinary organs of the herbivorous Cetacea, as it is exemplified in the Dugong alone, we should have to establish as a marked distinction in the species of the manatees, Manatee, and Echidna, in the enclosed organic systems. Instead of the numerous and minute lobuli or renules into which the kidney is subdivided in the Dolphins and Whales, it presents in the Dugong a simple compact form with an unbroken external surface, where the organ is compressed into a series of eleven mammmillae, which project into a single elongated cavity or pelvis, from which the ureter is continued. In the Northern Manatee however, Steller, whose accuracy Professor Owen justly notices, describes the kidney as a series of minute lobules, or renues, and this is, as a matter of course, the case in the Manatus americanus, merely notices the kidneys as oblong, and placed opposite to each other; nor does his figure give any indication of lobulated structure; neither does Sir Everard Home mention such structure in the Anatomy of the Manatee, in Phil. Trans. (1821). The want of uniformity in the structure of the kidney in the herbivorous Cetacea is however, Professor Owen adds of less moment with reference to their natural affinity, since in the Pachyderm we find some species with the Retinae, and, though in a less degree, the Elephant, presenting a subdivided kidney; while others, as the Tapir and Hog, have it entire.

In the fossa of the Dolphin, according to Müller, the lobules of the kidney consist of a large number of convoluted uriniferous ducts extending from the apex to the circumference of the lobule: the intertwinnings of the tubuli are greatest in the intercostal portion. It is a curious fact, Professor Owen remarks, that the supra-renal gland in the Porpese presents a certain resemblance to the kidney in its lobulated exterior; but, he adds, the analogy extends no farther, for on making a section of this part it was found to consist of the usual continuous compact substance.

In the Museum of the Royal College of Surgeons, No. 1266 is the right kidney of a young Porpese injected, showing the component renules; No. 1267, 1268 are transverse and longitudinal sections of the kidney of the Piked Whale (Balana hoopa, Linn.); No. 1290 is the supra-renal gland of Dolphines and enamel; and No. 1291 shows the kidney and supra-renal gland of a Porpese. (Physiological Series.)

Generative System.

The organs of generation, being those which are most intimately related to the function of an animal, have always been regarded by Professor Owen, and most justly in our opinion, as affording very clear indications of its true affinities. We are the least likely, says he, in the modifications of these organs to mistake a merely external and superficial likeness, but they have, as it were, the well-known fact that the true Cetacea have no trace of vestigial seminales; but he found these bars present, and of large size, in the Dugong. The case deferentia were short and disposed in irregular convolutions. Each crus penis was
attached to the lower expanded extremity of the ischium, which were anched to the ilia on each side. In the smaller cetaceans it is diminished to a proportionate size, as its extraordinary development in the Dolphin, as observed by Professor Owen, in the retractor penis, runs along the sides to the under surface of that organ; whereas in the Dugong the corresponding muscles are inserted into the dorsum penis, as in the elephant: they meet, be adds, and join in a strong tendon half-way between the crus and the glans penis. Proceeding in his inquiry, Professor Owen observes that the true Cetacea the body of the penis consists of a single corpus cavernosum, grooved above for the passage of the vena dorsalis, and deeply excavated below for the lodgment of the urethra; a condition of utterance which presents a marked deviation from the ceteal structure of the two previous parts, which presents in a transverse section a division of the corpus cavernosum into two lateral portions, the lateral ligamentous septum, as in the Pachyderma; the vascular mass which fills the tube, in each whale, bears a greater proportion to the surrounding ligamentous structure than in the true Cetacea. The testes, observes the Professor in conclusion, are abdominal in the Dugong, as in the rest of the Cetacea; but, he adds, they also have a similar position in the Elephant.

John Hunter remarks that the organs of generation of this order of animals come in both sexes nearer in form to those of the Ruminants than of any others; and this similarity is one of the marks by which the female their situation varies on account of the modification of the external form of the body.

The female organs in the Rytina have been described by Steller, and Sir Everard Home has given an account of them in the tongue, of the_Whale_.

Hunter, in his paper on Whales has entered particularly into the structure of those of the Zoophagous cetaceans.

The copulation has been alleged to be carried on in an upright position with the heads of both sexes at the surface; the small formation of the body would not admit of the female taking that position, and the organ is thus in a perpendicular position.

If, by using the vulgar word _perineum_, we may denote the region between the thighs and the body; the external urethra, the vagina, and the hymen, as the parts which have to be formed for the organ of generation; the men of the Whale is an organ which is the seat of these functions, and is the organ of generation.

It is also the organ of smell, which is capable of but slight motion.

But it has been doubted whether the Zoophagous Cetacean are endowed with a special organ for the enjoyment of this sense. No fossil nor conical papillae are preserved in the Dolphin, but the Piged Whale. It was at once supposed, therefore, he remarks, to account for the manner in which such animals smell the water; and why the others should not have had such an organ, which seems to be peculiar to the large and small Cetacean whales (Balene mysticetes and Baleno optera rostrata, in which to which has, he adds, is extremely small, when compared with that of other animals, as well as the nerve which is to receive the impression.

Nos. 1841 to 1846; both inclusive, in the series above quoted, illustrate the nasal passages, &c. in the Zoophagous Cetaceans.

Taste.—The complicated and delicate structure of the tongue in the Phyllodochus cetacean indicates the presence of taste, although the tongue is capable of but slight motion.

John Hunter, in his paper on Whales, which is the organ of taste, is also endowed with the sense of touch. He found the tongue in the Porpesse and Grampus firm in texture, composed of muscle and fat; and pointed and serrated on its edges, like that of a hog. In the Spermaceti Whale, however, he says, it was almost as soft as that of a feathered animal. The Piged Whale it was but slightly raised, hardly having any lateral edges, and its tip projecting but little, yet, like every other tongue, composed of muscle and fat. He supposes that the tongue of the large Whalbone Whale rises in the mouth considerably; the two jaws in the middle being kept at such a distance on account of the whalbone, so that the space between, when the mouth is shut, must be filled with the tongue.

Nos. 1846 to 1848; both inclusive, illustrate the organization of the tongue in the Zoophagous Cetacean (Delphinus, Balena, and Hyperoodon), in the Physiological Series of the Museum of the Royal College of Surgeons.

Sight.—The eye in the Herbivorous Cetaceans only is provided with a nictitating membrane, as the Zoophagous or Spouting Cetacean has no lacrimal glands, but the lids are furnished with glands for a mucous secretion adapted for lubricating the sclerotic coat.

John Hunter states that the eye in this tribe is constructed upon nearly the same principle as that of quadrupeds, differing however in some circumstances; by which it is probably better adapted to see in the medium through which the light is to pass. It is upon the whole small for the size of the animal. The lids have but little motion, and are not provided with a nictitating membrane, which in quadrupeds, but rather of the common adipose membrane of the body; the connection however of their circumference with the common integuments is loose, the cellular membrane being less loaded with oil, which allows of a great fold being made in the skin, and of the eye being opened the eyelids. This is not to an equal degree, he adds, in them all, being less so in the Porpesse than in the Piged Whale. A detailed account of the anatomy of the eye in whales will be found in Hunter's_ Illustrations of the Figures of the College_. No. 1777 A exhibits the eyeball and characteristic nictitating membrane in the Dugong.

Nos. 1773 to 1777, both inclusive, illustrate the eyeball and its appendages in the Porpesse, Dolphin, and Piged Whale.

Hearing.—There is no external concha; but the ear is constructed much upon the same principle as in the qu
ped; there are however certain differences which the reader will find set forth in Hunter's paper. The sense seems to be fairly developed, and Whale-fishers experience no small difficulty from the warning given by both eye and ear. It has however been stated that the Greenland whale, though not about a mere sense of hearing, remains insensible to the report of a cannon.

In the Physiological Series of the Museum of the College, the following preparations illustrate the organ of hearing in the Whales:—No. 116, section of the tympanum of Balena mysticetus steered in acid; and No. 1582 to 1586 B, both inclusive, affording a striking example of the extent of John Hunter's researches relative to this organ in the Zoophagous Cetaceans.

Touch.—The sensation of touch must be lively, though it is commonly believed that the common Dolphin, notwithstanding its delicate epidermis, is not very sensible to tactile impressions. M. Breschet and M. Roussel de Vaurèze distinguish the following constituents in the skin of the Cetaceans:—1. Derm, or corium, a dense fibrous cellular texture, which contains and protects all the other parts of the skin. 2. The papillary bodies, consisting of papilla, covered by the derm. 3. The cutaneous apparatus, consisting of soft, elastic, spiral canals, which extend through the entire thickness of the derm, and open in the interspace of the papilla, which is closed, generally, by a small epidermic valve. 4. The inhalant apparatus. 5. The mucous apparatus. 6. The colorific apparatus.

According to Hunter, the reticular network containing the blubber, which is described by him as fine in the Porpoise, Spermaceti, and large Whalebone Whale (Balena), and coarse in the Grampus and small Whale-bone Whale (Balenosperma), forms part of the skin. See above, p. 257. (Taste).

The preparations illustrative of the organs of touch, besides those noticed under the head of Taste, in the Physiological Series of the Museum of the College, are Nos. 1463, 1404, 1405, 1406, exhibiting a section of the tail of a Porpoise; a cuticle in the whale, removed, to show the villi of the cuta, a portion of the true skin of a whale, a section of the same, and a portion of the plicated integument from the under part of the neck or thorax of the Piked Whale (Balena loops, Linn.), showing the puckering of the softer skin in the interspaces of the longitudinal folds.

Natural History.

The natural history of the Phytophagous and Zoophagous Cetaceans, even moderately followed out, would of itself be a large subject. Our space will not permit us to give more than a mere descriptive sketch of some of the forms of this great and highly interesting order. The same reason has compelled us to omit much valuable information relative to their organization; but we have endeavored in our compressed abridgment to touch on most of the leading points.

Phytophagous Cetaceans.

We have treated of this division under our present title, because the animals which it comprises would be looked for here, in consequence of the general position assigned to them by zoologists; but it is impossible to study their organization and habits without perceiving that they do not belong to the true Whales: they are, in short, Aquatic Pachyderms.

It is not indeed surprising that they should so long have been confounded with the Cetaceans: for their general appearance and horizontal tail, joined to the difficulty of distinguishing either with those or the Walrus, notwithstanding their aquatic habits, led naturally to their being placed in the same order with the true zoophagous whales. But with external form almost all resemblance ceases; these phytophagous mammals are such as they ought to be, referred to a separate group, there will not be, so far as discovery has hitherto gone, any such animal as a phytophagous whale.

The short and thick neck, fin-like fore-legs, want of hind-legs, caudal tegumentary fin, smooth, naked, and almost hairless integument, are all modifications of external form by which the Dugongs and Manatees are adapted to play their part in the water: but the kind of part, says Professor Owen, which they are to play in that element depends on organic characters which mainly, if not exclu-

sively, reveal their true affinities. Now we have seen that the whole of the internal structure in the herbivorous Cetacea differs as widely from that of the carnivorous Cetacea as do their habits; that the amount of variation is as great as well could be in animals of the same class existing in the same great deep. The junction of the Dugongs and Manatees with the true Whales cannot therefore be admitted in a distribution of animals according to their organization. With much superficial resemblance, they have little real or organic resemblance to the Walrus, which exhibits an extreme modification of the amphibious carnivorous type. I conclude therefore that the Dugong and its congeners must either form a group apart, or be joined, as in the classification of M. de Blainville, with the Pachyderms, with which the herbivorous Cetacea have the nearest affinities, and to which they seem to have been more immediately linked by the now lost genus Dinotherium.

These Aquatic Pachyderms consist of three genera: namely, the Manatees (Manatus, Cuv.); the Dugongs, Histoires, Ill. (Dugongus, Camper, &c.); and the Mammals (Stellerus, Cuv., Hyotis, Ill.).

Manatus.

Generic Character.—Body oblong; molar teeth marked with two transversal elevations; crown with no canines in the adult; vestiges of nail on the edges of their anterior extremities or pectoral fins; pectoral mammae; skin very thick and naked; whiskers very strong and close set; horizontal tail thick, tegumentary, and elongated oval.

Dental formula:—Incisors, 3-3; molars, 4-4 = 34.

Cuvier describes the Manatees as having an oblong body terminated by an elongated oval fin; eight molar teeth in each jaw, with a square crown marked by two transverse ridges; neither incisors nor canines in the adult; but in the very young ones two small pointed teeth are found in the intermaxillary bones, which disappear early. The vestiges of nails are observable on the edges of their flippers, which they use dexterously enough in creeping and carrying their young. This has caused these organs to be useless to hands, whence their name Manati, or Ma-

Geographical Distribution of the Genus.—The warmer parts of America and its islands: Western Africa.

The mummies of the Manatees and Dugongs are pectoral, and this conformation, joined to the adroit use of their flippers (whose five fingers can be easily distinguished through the investing membranes, four of them being terminated by nails) in progression, nursing their young, &c., have caused them, when seen at a distance with the anterior part of their body out of the water, to be taken for some creature approaching to human shape so nearly (especially as their muzzle is thick set with hairs, giving somewhat of the effect of human hair or a beard), that there can be little doubt that a few of the tales of Mer-
man and Mermaids have had their origin with these animals, as well as with Seals and Walruses. Thus the Portuguese and Spaniards give the Manatee a denomination which signifies Woman-fish; and the Dutch call the Dugong, Baardmanetje, or Little Bearded Man. A very little imagination, and a memory for only the marvellous portion of the appearance sufficed, doubtless, to complete the metamorphosis of this half woman or man, half-fish, into a Siren, a Mermaid, or a Merman, and the wild recital of the voyager was treasured up by such writers as Mallet, Laepke, Dapper, Bois, Sachs, Velasquez, and others, who, as Cuvier well observes, have displayed more learning than judgment.

Example, Manatus americanus. Description.—The American Manatee is of rounded form, and can be filled only with a leathern bottle or wine skin. The head is conical, and no depression marks its junction with the body; the muzzle is stout and fleshy, semicircular at its upper part, where are the two semilunar apertures of the nostrils. There is no tail, and two tufts of stiff bristles spring from its sides: the lower lip is shorter and straighter than the upper, and the internal lining of both consists of short hard very thick hairs. The mouth is not large, and the eyes are small. Two small fissures in the skin form the only appearance of external ears. The flippers or swimming paws have more freedom of motion than those of the true Whales; the articulations of the fingers may be felt through the skin, and are endowed with considerable power and motion. There is no nail on the thumb, but the four fingers are furnished with nails, that of the little finger being very small. The skin is greyish and coarse, like bull’s hide, some say slightly shagreened, and having isolated hairs scattered here and there; these hairs are most numerous at the angle of the mouth and behind the paws. The mannae are situated on the breast, and are not much developed, except during the period when they are called into action for the supply of the young.

This species reaches twenty feet in length, and is the Sirena, and Fauche Marine, and Femme Marine, of the French: Sea-Cow of the English. Strange figures were given of it by the older naturalists; that in Hernandez has the fore-feet terminated with solid hoofs.

Geographical Distribution. — Manatees are found on the rivers and the Antilles, about the mouths of rivers.

Habits, Food, &c. — The Manatees are gregarious, and generally go in troops. The young are usually placed in the centre of the herd for protection, and on the approach of danger, all unite for that common safety. It is alleged that, when one has been struck by a harpoon, its companions will tear out the weapon; and so are attached to their young that if the calf be taken the captors are sure of the mother, from the recklessness with which her maternal affection leads her to the place of capture. If the mother be captured, the young follow her to the shore and fall an easy prey.

The shallow bays of the Antilles and the quiet creeks of the South American rivers, particularly in Guiana and the Brazil, are the favourite haunts of the Manatee. They were formerly abundant at the mouths of the Orinoco and Amazon, ascending many miles, even into their tributaries and the fresh water lakes. There their actions are recorded as being similar in some respects to the whales, such as breaching or leaping to a considerable height out of the water. The food is entirely vegetable, consisting of submerged plants and littoral herbs, principally. According to Hernandez, Humano more coy, forina supina in littere fere tota proeminente, accelerate quadam superficiem manus rectas, that only one young is produced at a birth. The milk is said to be agreeable to the taste.

Utility to Man. — The mild inoffensive manners of the Manatee, and the unsuspecting nature of the animal, make it an easy prey to the hunter, who pursues it for the sake of the flesh, which all pronounce to be excellent, both fresh and salted. Hernandez compares it to well fattened pork of pleasant flavour, but says that it is noxious to those labouring under lues venereum. Others compare it, when boiling, to best of veal in flavour, and state that when salted it makes excellent sea provision.

It is alleged that formerly they were so plentiful within ten or twelve leagues of Cayenne, that a large boat might be filled with them in a single day, when their flesh was sold in the market at about threepence a pound. But the eagerness with which it was purchased soon reduced the numbers, and made them comparatively scarce.

The capture is generally effected by means of the harpoon. At St. Domingo the hunters approached them in a small boat, and struck them with a large harpoon to which a long stout cord was made fast. The struck animal made violent efforts to escape, carrying with it the harpoon and cord, to the end of which a cork or piece of light wood served as a buoy was attached, and indicated the whereabouts of the manatee. After a while the hunters took hold of the rope and at last drew the exhausted animal on shore, where it was killed. The sport of manatee-eating, thus conducted, is described as highly diverting, but the boat is sometimes upset by the struggles of the animal in the shoals.

Manatees have reached Europe. The carcass of one which had been long dead, is recorded to have come on shore at Newhaven in the Frith of Forth, in the autumn of 1765; and Duhamel states that one with its cub was thrown on shore near Dieppe.

Teeth of Dugong. (P. Ovo.)

The attention of Professor Owen was particularly directed to the dentition of the Dugongs of different sexes which he examined, from which it appeared that, as in the Narwhal, the permanent teeth of the female are arrested in their growth, and remain throughout life concealed within the substance of the intermaxillary bones and the alveolar incumbrance. The

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cavity of the tusks, he states, is in like manner filled up by the secretion of the pulp which retrogrades in the course of its absorption, and hence the tusks are solid, like the corresponding tusks in the female Narwhal, or at least, present only a shallow cavity at their expanded and distorted base. He found in one cranium of a male Dugong, in the upper jaw, the deciduous incisors or tusks co-existing with the permanent ones. In the skull of a male, which had 3-3 molars, the sockets of the deciduous incisors were obliterated, and the points of the permanent ones projected from their sockets. Not more than twenty pairs of teeth on each side of the jaw, appear to be developed in this animal.

"It is obvious," says Professor Owen, "that the different form and condition of the tusks thus observed in the heads of Dugongs of the same size and age, might be regarded as indicating the necessity on the anterior edge of the tusks of forming the short and nearly vertical snout, was furnished with soft papillae and a few bristles; a horny substance covers the lips, the upper of which is movable and tumid on the edge; the lower is much smaller, resembling a round or oblong chin. The inside of the cheeks is furnished with strong projecting bristles. The nostrils are situated on the summit of the upper jaw, where it curves downwards, and penetrate obliquely, so that the upper surfaces are placed upon the lower surface of the mouth, a valve capable of being shut at the will of the animal. The eyes are small. The little aperture of the ear is hardly perceptible. The mammae are placed on the chest, beneath the thick and fleshy flippers or paws, which are rather oval than circular, and there is no noticeable appearance of nails. The tail is broad, and lobated or crescent-shaped. The skin is three-quarters of an inch thick, of a uniform blueish colour, sometimes blotted with white below. Length from seven to eight feet.

Geographical distribution. Sumatra and all the warm seas of the Indian archipelago. It is said to have been observed at the north of New Holland, and to have once been common at the island of Rodriguez.

Habits. Food, &c. The external form of the Dugong, says Professor Owen, is not a very beautiful adapted for swimming rapidly through the water as that of the dolphin and other carnivorous cetacea, which subsist by a perpetual pursuit of living animals. In these the snout is conical and peculiarly elongated, and in some, as the Delphinus Gangeticus, the jaws are provided with an external difference so great as to give them every advantage in seizing their swift and slippery prey; whilst in the herbivorous Dugong the snout is as remarkable for its obtuse truncate character—a form however which is equally advantageous to it, and well adapted to its habits of browsing upon the algae and fauces which grow upon the submarine rocks of the Indian seas. As, from the fixed nature of the Dugong’s food, the motions of the animal during the time of feeding must relate more particularly to the necessity of breathing to enable it to respire, its tail, the principal locomotive organ of ascent and descent, is proportionally greater than in the true cetacea, its breadth being rather more than one-third the length of the whole body. But the most important external differences are seen in the presence of the membrana nictitans, in the anterior position of the nostrils, and in the situation of the mammary, which are pectoral, or rather axillary, being situated just behind the roots of the flippers; in the female specimens examined their base was about the size of a shilling, and they projected about half an inch from the surface. A considerable ridge extends along the middle of the upper surface of the posterior part of the back, which is continued upon and terminates in the tail.

The haunts of the Dugong, which does not appear ever to frequent the land or fresh-water, are generally in the sea-shallows, where the water is not more than two or three fathoms.

Sir Stamford Raffles states that during six months four of these animals were secured at Singapore, but that the greatest number is said to be found in the southern monsoon, when the sea is most calm, near the mouth of the Johore River. They are usually caught by spearfishing, in which the natives are very expert, during the night, when the animals indicate their approach by a snuffling noise which they make at the surface of the water. The first object of the captor is to secure and elevate the tail, when the animal becomes perfectly powerless. Sir Stamford adds, that the Dugongs are seldom caught at Singapore above eight or nine feet in length; but how much larger they grow is not ascertained, as, when they exceed that size, their superior strength enables them to make their escape.

Leguat, who speaks of them as occurring at the Isle of Pines, says they might be considered the largest of all the crab-eating mammals. It is not long since, he says, that they were twenty feet long, but were very easily taken. They fed in flocks like sheep in three or four fathoms’ water, and made no attempt at escape when approached. Sometimes they were shot at the end of the musket, sometimes laid hold of and forced on shore. Three or four hundred were met with together, and they were so far from shy that they suffered themselves to be handled, and the fattest were thus selected. The larger ones were avoided, not only on account of the trouble they occasioned, but because the meat was not so good as that of the smaller and younger ones.

The female Dugong produces generally only one young at a birth, and to this the mother bears such strong affection that, if the young is speared, the mother will not depart, but she may be taken at the behest of the Malaya. She is so affectionate that she will take the place of her child and they are so near from shyness that they suffer themselves to be handled, and the fattest were thus selected. The larger ones were avoided, not only on account of the trouble they occasioned, but because the meat was not so good as that of the smaller and younger ones.

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Utility to Man. The flesh is delicate, and is said to be superior to that of the humpback or common ox. The Dugong is sometimes said to be the most common animal in the Gulf of Paria, and the king has a right to all that are taken. Sir Stamford Raffles states that this species afforded much satisfaction on the table, as the flesh proved to be most excellent beef.

The Dugong of the Red Sea is considered different from that above noticed, by Professor Rüppell, who describes it by the name of Halicore parthenica, under the impression that it was with the skin of this species that the Jews were directed to veil the Tabernacle. He saw it swimming among the rocks of the islands on the Abyssinian coast near the Dakhla islands. The fishermen harnessed a female, which he dissected, ten feet long. The Arabs stated that they live in pairs or small families, that they have feeble voices, feed on algae, and that in February and March bloody battles occur in which the males participate, and the females do not become pregnant until the eighteenth year. The females are born in November and December. The flesh, teeth, and skin are esteemed by the Arabs.

The Dugong.

For an account of the northern form of this group, Str.-lers or Bythina, our limits compel us to refer the reader to Steller’s description in the second volume of the New...
Memoirs of the Petersburg Academy' (1751). Very little
addition has since been made to its history.

*Zoophagous Cetacea.*

Delphinus.

These have an elongated body, with their jaws more or
less projecting in the form of a beak, are without tusks,
but most frequently furnished with a great number of
Teeth simple and equal in size, which are however wanting
sometimes in some species; no baleen or whalebone;
blow-holes with a common opening in a crescent shape
on the head.

The dental formula of the family may be stated gene-
rrally as consisting of from 84 to 95 teeth in the upper jaw,
and from 65 to 75 in the lower jaw (190. 10 to 190).

Space will not permit us to notice more than two of the
numerous genera of this family.

*Phocoena.*

Generic Character.—Muzzle short, convex, and not
terminated in a rostrum; teeth numerous, placed irregularly
in each jaw; a dorsal fin.

Dental formula:—Molars, 40 to 46; incisors, 40 to 40 = 80 to 92.

Teeth of Porpoise. (F. Cuv.)

Example, *Phocoena communis,* Delphinus phocaena,
Linn.

Description. Upper part of the body deep bluish or
greenish black fading on the sides into the polished silvery
whiteness of the belly. The brownish flippers rise from a
white ground. Length from four to five feet.

Geographical Distribution.—Atlantic Ocean. Seas of
Europe.

This appears to be the *phocoena* (phocaena) of Aristot.
('Hist. Anim.' vi., 12). Some, Pennant and others, have
supposed it to be the *Tursio* of Pliny ('Nat. Hist.,' ix., 9),
which, according to the Roman naturalist, bears some
likeness to the Dolphins, of which he relates so many
aneedotes illustrative of their affection for man in the pre-
ceding chapter. It is the *Porpo sece* of the Italians
(whence probably the English name Porpoise), *Marronin*
of the French; *Morschein* and *Tumble* of the Swedes;
*Morschwein* of the Germans; and *Lamhiydja* of the
antient British.

Habits, Food, &c.—Porpoises swim in shoals, and drive
the mackerel, herrings, and salmon before them, pursuing
them up the bays 'with the same eagerness,' says Pennant,
'as a pack of dogs does a hare.' In some places they almost
darken the sea as they rise above water to take breath;
they not only seek for prey near the surface, but often de-
send to the bottom in search of sand-eels and sea-worms,
which they root up out of the sand with their noses in the same
manner as the hogs do in the field for their food. In fine
weather they leap, roll, and tumble in the manner so well
known, principally in the spring and summer, which is sup-
posed to be their rutting season. They go up the rivers in
pursuit of the salmon, to which they are a deadly enemy,
and other fish; and have been seen high in the Loire,
Charente, and Seine in France. It has been remarked that
when the porpoises are gamboling in the spring and sum-
mer, they appear heedless and blind to all danger and risk,
which, as their brain is highly developed, strengthens the
supposition that they are, at such times, actuated by the
sexual impulse to an extent that lessens their usual warie-
ness. On the 23rd May, 1842, we saw, about 10 A.M.,
two rolling and sporting a little above London Bridge
towards the Surrey shore. They seemed to disregard the
numerous steam-vessels which were constantly passing, and
to pay no attention to the wherries, some of which went
close to them. The man on the look-out in the steamer
from whose deck we watched them said that they had been
seen between five and six that morning near Southwark
Bridge, and that one of them had been hooked with a boat-
hook, but had got away. It was blowing fresh from the
south-west, and the tide was running up; the time for high
water at London Bridge that day being 6 P.M.

The period of intercretion is said to be six months,
and the young at the birth twenty inches in length. The
mother watches over it with the most tender care.

Those who have seen the porpoise in pursuit of the
salmon, describe the scene as most interesting from the
efforts of the salmon to escape, and the admirable
manner in which the porpoise counteracts their attempts. In
their distress the salmon frequently spring high out of the
water, but their ever watchful foe hides their release, and by
its quick, and well directed turns, seldom fails to
secure its prey.

*Utility to Man.*—The oil produced from the fat sur-
rounding the body is of the purest kind, and the skin when
carefully tanned and dressed is used for wearing-apparel,
and for coverings for carriages. The skins of porpoises
on the west coast of Ireland are said to be immense, and might
be well worth the attention of the neighbouring population if
furnished with boats and proper implements for their
capture, and conversion to economic purposes. An article
in a London newspaper, the flesh of the porpoise is stated
to be of more value than that of any other animal.

Received for dressing it appear in the 'Forme of Curte,' compiled (cir.
1390) by the master cooks of King Richard II. It appears to have
been used in France, as before mentioned, in broth, and roasted, and was
evidently used both fresh and salted. Several of them were on
the board at the great feast held at the 'intronization' of
George Nevell, Archbishop of York, in the reign of Edward
IV. In Henry VIII.'s time it continued to be a royal dish,
and was in fashion in the reign of Elizabeth. It appears to
have been, in those days, generally presented as a roast with a
sauce made of fine white bread crumbs, mixed with vine-
gar and sugar. The common dolphin, *Delphinus delphis,*
was then considered so great a delicacy, that, according to
Dr. Caius, one which was taken in his day was thought a
present worthy of the Duke of Norfolk, who distributed it
amongst his friends: it was roasted and dressed with the
porpoise-sauce last above mentioned. At a later period,
the porpoise kept its ground on the table of Roman Catho-
lics for fish-days and during Lent. Nor have modern nav-
igators found it undesirable food. Captain Colnett's people,
who fell in with numbers of them off the Mexican coast,
mixed their flesh with their salt-pork—making excellent
sausages, which formed their ordinary food. Captain Basil
Hall speaks with some relish of a dish of porpoise-cut-
lets, well separated from the investing land and blubber,
which was served at his table with such happy effect that
the dish left his cabin empty.

The flesh of the porpoise is the Greenlander's great
dainty, and he quails its oil as the most delicious of
draughts.

*Delphinus*

Generic Character.—Head obtuse, muzzle short and co-
obial, or terminated in an elongated rostrum; number of
teeth variable; no dorsal fin.

Dental formula, according to F. Cuv., 9 - 9 = 34.

8 - 8.
Example, Delphinapterus leucas, Delphinus leucas, Gm.
Description.—Head obtuse, muzzle short and conical; a small angular finness is to be the dorsal fin; colour, yellowish white or cream-colour; but they have been seen yellowish approaching to orange, and white tinged with red. The young with brownish spots, and occasionally, blue or slaty. No external ear, mouth small, eye hardly larger than that of man; iris blue. Spirecle on the vertex with its horns turned backwards. Length from 12 to 18 feet.

Geographical Distribution.—The Northern Ocean. This is the Beluga and White Whale of authors and navigators. White Flook of the whalemen.
One of these dolphins haunted the Frith of Forth in the summer of 1815 for nearly three months, passing almost daily upwards, and again retiring, with the flood and ebb. It was supposed to be in pursuit of salmon, and, after many unsuccessful attempts, to have swallowed one; the salmon was killed immediately, and the fire-arms and spears. Mr. Bald, of Alloa, bought it and sent it to Professor Jamieson: it is now in the Edinburgh Museum, and formed the subject of the interesting observations of Dr. Barclay and Mr. Neil in the Transactions of the Wernherian Society.
Mr. Neil remarks that the shape of this animal is very symmetrical, suggesting the idea of perfect adaptation to rapid progression in the water. Its head, he observes, is small and long-headed, and over the forehead there is a round cushion of flesh and fat: the body continues to swell as far as the large, thick, oval flippers, and from that point gradually diminishes to the setting on of the tail, which is powerful, and described as bent under the body in swimming, and propelling the animal with the velocity of an arrow.
The contradictory accounts of the number of the teeth arise probably from differences of age. In the specimen examined by Mr. Neil, they were 9 to 0.
Habits, Food, &c.—The higher and Arctic latitudes appear to be the chosen haunts of the Beluga. They abound in Hudson’s Bay, Davis’s Straits, and on parts of the southern coasts of Asia and America, where they ascend the large rivers. Steller noticed them at Kamuchka; and in Charles’s time they were numerous in the Gulf of St. Lawrence, going with the tide as high as Quebec. Disco Island in Greenland is said to abound with them, nor are they scarce at Spitsbergen. Scoresby did not see them lower than Jan Mayen’s Land; he seldom observed them among the ice, but where the water was clear and smoothest. They are described as not at all shy, but often following the ships, tumbling about the boats in herds of forty or fifty, bespangling the surface with their brilliant white and yellowish whiskers. The whale-fisher seldom disturbs these beautiful creatures, for they are not only difficult to strike of account of their activity, but, when stricken, the harpoon frequently drawer, and if it holds, the capture is but of little value. Sir Charles Gieseeck speaks of their regular annual visitation at November. The whales of Greenland, where they become a seasonable supply to the natives when other provisions fall short. They arrive in herds with stormy weather and south-west winds, and are taken with harpoons and strong nets. Cod, haddock, flounders, &c., are said to be the usual food of the Beluga.

Utility to Man.—The oil is reported to be of the best, whitest, and finest quality, and of their skins a sort of Mo-

rocco leather is said to be made, which, though thin, will resist a musket-ball. The internal membranes are used for windows, and bed-surfains, and the sinews for thread. The flesh, it is asserted, resembles beef, though somewhat oily. Hans Egede describes both it and the fat as having no bad taste; when it is marinated with vinegar and salt, and says that it is then as well flavoured as any pork whatever. He declares the lips also and the tail ‘pecked or sauced’ be very good eating, so that, according to Hans, he is very good cheer.’

Monodon.

Generic Character.—Body elongated, a slight longitudinal projection or crest in place of the dorsal fin; flippers oval.
Dental formula: 1—1; molars 0.

Example, Monodon monoceros.
Description.—General form long ovoid. Head about a seventh of the whole length, with a slight depression behind it where it joins the body; forehead rising suddenly and almost perpendicularly from the mouth, then depth; but the belly was everywhere with a hair glittering in a slight elevation. Blow-hole directly over the eye, which is small, the orbit oval, the iris chestnut, and the selerotic coat white. The back rises gradually to a few inches behind the flippers, where it is thickest. There are four teeth, the upper incisors and upper parts on each side, giving the body, especially towards the tail, somewhat of a squared appearance. Flippers elliptical and rather curved, the anterior edge thickest, and small in proportion to the size of the animal. The tail, about two inches high and between two and three feet long, about midway between snout and tail, in place of a dorsal fin. Tail in the proportion of about twenty inches in length to four feet in breadth. Colour blackish-grey on the back, variegated with numerous dark spots running into each other, forming a dusky-black surface; the sides with paler and more open spots of grey on a white ground. No spots on the belly. The ground colour in old narwhals is stated to be entirely white, with the edge of the head variegated, as in a normal man; the old male narwhals have the upper incisors incised, but the lower perfectly smooth; whilst on the belly they are faint and few, occurring at intervals, and considerable spaces being spotless. In one stranded on the Elbe the skin was white as snow, marked with a multitude of dark spots to a considerable depth; but the belly was everywhere with a hair glittering. Length from fifteen to sixteen feet without the tusks.

Geographical Distribution.—The Northern Ocean. This is the Narwhal of the Germans; Narwal, Unicorn, and Livorne de Mer of the French; and Narwhal and Lunevr Whale of the Dutch. The Narwhal, Monodon monoceros, is a species of whale which is distinguished by the long, curled, and spirally twisted tusk, or narwhal’s tusk, that is frequently carried by the male of the species. The Narwhal is a toothed whale, and like all other toothed whales, it is characterized by the presence of teeth, which are modified to form tusks. The Narwhal’s tusk is a single, spirally twisted, hair-like structure that is shed and replaced throughout the life of the animal. The Narwhal is most commonly found in the cold Arctic waters of the Northern Hemisphere, particularly in the Bering Sea, the Chukchi Sea, and the Davis Strait. It is a rare and elusive animal, and their tusks are highly valued as decorative items.
nearly three times as great as the width of its own mouth. As the animal in which these remains were found had a
tusk of seven feet, Mr. Scoresby apprehended that this
instrument had been employed in the capture of the
fishes on which it had fed. It seemed probable
to him that the skates had been pierced with the horn and
killed before they were devoured; otherwise, he observes,
it is difficult to imagine how the narwhal could have swal-
lowed them, or how a fish of any activity would have per-
mitted itself to be taken, and sucked down the throat of
that smooth-mouthed animal without teeth to detach and com-
press it.

The Narwhals swim with great swiftness. When at the sur-
face for respiration, they blow repeatedly with considerable
force, and then frequently lie motionless for several minutes
with their back and head just above water. Mr. Scoresby
describes them as often sitting about his ship, sometimes
in bands of fifteen or twenty together, often elevating
their long tusks and crossing them with each other as if
they were fencing. They often uttered a very unusual
sound, resembling the gurgling of water in the throat, which
Mr. Scoresby thinks produced it, as it only occurred when
they reared their tusks, with the front of the head and
mouth out of the water. Several of them followed the
ship, seeming to be attracted by curiosity: as the water was
perfectly transparent, they could be seen descending to the
beel and playing about the rudder for a considerable time.

Sir Joseph Banks stated to Dr. Fleming, who has published
the Wernerian Transactions that a narwhal stranded on the Lincolnshire coast was
found with the whole of its body buried in the mud of the
beach, and seemed safely and securely waiting the return
of the tide.

Utility to Man.—The blubber yields a very superior oil,
which, as well as the flesh, is considered a dainty by the
Greenlander, who regards the Narwhal as the herald of the
Mysticete, in whose neighbourhood the former is, they say,
generally to be found, perhaps from partaking of the same
food. When harpooned, it swiftly dives to about two hun-
dred fathoms, and on its return to the surface is killed by
fences. The Greenlander drives them to fissures in the
sea, where they come up to respire, and kills them with
harpoons, &c. The ivory of the tusk is considered superior to
that of the elephant, it is very dense and hard, very
white, is not subject to become yellow, and is susceptible
of a high polish. They formerly brought a high price, and
many virtues were attributed to them [UNICORN]: they
still form a valued article in commerce. The celebrated
thrones of the Danish kings is stated to be made of the
tusks of this animal.

The Narwhal.

Physeteridae.

Physeter.

Generic Character.—Length of the head equal to a
third or half of the total length; upper jaw large, elevated,
as either without teeth or furnished with very few, which
are short, and nearly entirely hidden by the gum; lower
jaw narrow, and armed with stout conical teeth; orifrices
of the blow-holes united; and situated at the end of the
upper part of the muzzle; no dorsal fin.

This form is described by M. F. Cuvier, who gives it
from the skeleton in the Paris museum, and is confined to
the lower jaw only, from which it may be inferred that in
the French specimen there is no appearance of teeth in the
upper jaw; in the lower there are 27 on each side
*51.

Teeth of Narwhale.

Example, Physeter macrocephalus.

Description.—To render the following abridgment of
the description by Mr. Beale (who, in his excellent work
on the 'Natural History of the Sperm Whale,' has done
more to elucidate this habitat and form than any other
writer) more intelligible, we prefix, as he himself does, his
cut, which is by far the most accurate published figure
extant of the Spermacei Whale.

The head presents a very thick blunt extremity, consti-
tuting about a third of the whole length of the animal;
at its junction with the body is a large protuberance on
the back called 'the bunch of the neck'; immediately
behind this is the thickest part of the body, which from
thence gradually tapers off to the tail, but it does not be-
come much smaller for about another third of the whole
length, when the 'small' or tail commences; and at this
point also, on the back, is a large pyramidal prominence
called 'the hump,' from which a series of smaller processes
run half way down the 'small' or tail, constituting what
the whalers term the 'ridge.' The body then contracts so
much as to become finally not thicker than that of a man,
and terminates by expanding on the sides into the 'fleeks'
or tail, forming a large triangular horizontal fin with a
slight notch or depression posteriorly between the fleeks,
which are about six or eight feet in length, and from
twelve to fourteen in breadth, the largest males or 'Bulls.'
The chest and belly are narrower than the broadest part
of the back, and taper off evenly towards the tail: the
depth of the head and body is, in all parts except the tail,
greater than the width. The head, viewed in front, pre-
sents a broad somewhat flattened surface, rounded and
contracted above, considerably expanded on the sides, and
gradually contracted below, resembling in some degree the
cutwater of a ship. The slit of the single blowing-
hole or nostril is about twelve inches in length. In the
right side of the nose is the 'case,' a cavity for the pur-
pose of secreting and containing an oily fluid, which after
death concretion into a granulated yellowish substance:
this is the spermaceti. In the case of a large whale there
is not unfrequently a ton, or more than ten barrels, of sper-
maceti. Beneath the case and nostril is the elastic 'junk,'
formed of dense cellular tissue strengthened by strong ten-
dinous fibres, and infiltrated with very fine sperm oil and
spermaceti. The mouth extends nearly the whole length
of the head. Both the jaws, especially the lower, are con-
tracted in front to a very narrow point; and when the
mouth is closed the lower jaw is received within a sort of
cartilaginous lip, or projection of the upper one; but
principally in front, for further back at the sides, and
towards the angle of the mouth, both jaws are furnis-
shed
with tolerably well-developed lips. The tongue is small and white. The throat is capacious enough to give passage to the body of a man, presenting a strong contrast to the contracted gullet of the Greenland Whale. Throughout, the mouth is lined with a pearly white membrane. The gill-apertures are proportioned to the size of the animal, and are furnished with eyelids, the lower of which is most moveable. At a short distance behind the eyes are the external openings of the ears, sufficiently large to admit a small-quill. Not far from the posterior angle of the mouth are the swimming-paws or flukes, which are not much used in progression, but probably more as balances, and occasionally in supporting the young.

Mr. Beale gives the following as the dimensions of a sperm whale of the largest size, or about eighty-four feet in length: breadth of the head from ear to ear, thirteen feet; breadth of body from five to six feet; depth of body seldom exceeding twelve or fourteen feet; circumference seldom exceeding thirty-six feet; swimming-paws about six feet long and three broad.

The skin is smooth, but occasionally in old whales wrinkled. The general colour is very dark, deepest on the upper part of the head, back, and flukes, in which situation it is sometimes black; on the sides it gradually assumes a lighter tint, and on the breast becomes silvery grey. The hair varies in different individuals in a variety of shade, and some are piebald. Old "Bulls" have generally a portion of grey on the nose immediately above the fore-part of the upper jaw, when they are said to be grey-headed. The "black skin" in young whales is about three-eighths of an inch thick; in old whales, about one eighth. Immediately beneath the black skin is the blubber or fat, termed the "blanket," of a light yellowish colour, producing when melted the sperm oil.

Habits, Food, &c.—The bulk of the head is, as we have seen, a membranous "case," containing a thin oil of much less specific gravity than water; below which again is the "junk," which, although heavier than the spermaceti, is still lighter than the element in which the whole moves; consequently, observes Mr. Beale, the head is taken as a whole is lighter specifically than any other part of the body, and will always have a tendency to rise at least so far above the surface as to elevate the nostril or blow-hole sufficiently for all purposes of respiration; and moreover, this, a very slight effort on the part of the whale, would only be necessary to raise the whole of the anterior flat surface of the nose out of the water. At very regular intervals of time the snout emerges, and from the extremity of the nose the spout is thrown up, and at a distance apparently directly upward, and with an expired air forcibly ejected through the blow-hole, and acquires its white colour from minute particles of water previously lodged in the chink or fissure of the nostril, and also from the condensation of the aqueous vapour thrown off by the spout. In the whale, said to be Beale's in section, is projected at an angle of 130° in a slow and continuous manner for about three minutes, and may be seen from the mast-head in favourable weather at the distance of four or five miles. When the whale is alarmed or galloped the spout is thrown much higher with great rapidity, and differs much from its usual appearance. Immediately after each spout the nose sinks beneath the water, scarcely a second intervening for the act of inspiration, which must consequently be performed very quickly, the air rushing into the lungs by the diminishing spout. There is no sound caused by inspiration, and very little by expiration in this species; in short, nothing of that loud noise called the 'drawback' in the Finback and other whales. Ten seconds is occupied by a large bull sperm whale in making one inspiration and one expiration; during six of these the nostril is beneath the water. At each breathing-time the whale makes from sixty to seventy expirations, and remains therefore at the surface ten or eleven minutes. When the breathing-time is over, or, as the whales term it, the "head-turn," they stop porpoising and spouting out of an upright position; this last act is called "peaking the flukes," and those who are on the lookout call loudly when they see it—there goes flukes. The whale continues thus hidden beneath the surface for one hour and ten minutes; some will remain one hour and twenty minutes, and others only for one hour; but these, Mr. Beale says, are rare exceptions. A seventh of the time of this whale is, Mr. Beale makes out, consumed in respiration.

Small fishes are occasionally swallowed in quantities by this whale, and one has been known to eject from its stomach a fish as large as a moderate sized salmon; but the principal food of the Sperm Whale appears to consist of squids or cuttle-fishes. [Explana.]

This species is gregarious; and the herds called schools are of two kinds, one consisting of females, the other of young males not fully grown. Mr. Beale has seen as many as five or six hundred in one school. With each female school are from one to three large 'bulks' or school-masters, as they are termed by the whalers. The full-grown males almost always go alone in search of food; they are when alone very incautious and easily killed. It is the smaller, or 'forty-barrel bull,' as he is called, that makes the most desperate resistance. A large whale will yield eighty, and sometimes one hundred barrels of oil.

Mr. Beale states that the female is smaller than the male, and that she breeds at all seasons, producing generally only one at a time, but sometimes two. Nothing certain appears to be known as to the period of gestation; but the eldest Cuvier, and others, have supposed that it is not more than from four to five months; and Captain Colnett states that the young sperm whales which he saw in great numbers off the Galapagos Islands were not larger than a small porpoise. Mr. Beale's own observations coincide with those of Mr. Bennett.

Many other habits of this whale are interesting; or breaking, or leaking clear out of the water and falling back again on its side, so that the breach may be seen in a clear day from the mast-head at a distance of six miles; 'going head out,' a mode of progression which enables it to attain a considerable length; and Captain Colnett states that the young sperm whales which he saw in great numbers off the Galapagos Islands were not larger than a small porpoise. Mr. Beale's observations coincide with those of Mr. Bennett.

Geographical Distribution.—Very wide: the species has been seen in almost all seas, but it is principally found in the Southern Ocean, on the coasts of America, Japan, New Guinea, Timor, &c. Calachots have occasionally been stranded in the British Islands, as in the Frith of Forth, the Ormeys, &c.

Family Character.—Head not so convex forward as that of the Cachalot: both sides of the upper jaw furnished with transverse plates of a fibrous horny substance with loose or unwrinkled edges, being the baleen, or whalebone; lower jaw entirely unarked.

Generic Character.—No dorsal fin, which in some species is replaced by a boss or hump. In this genus, the baleen or whalebone is most highly developed. John Hunter describes this extremely elastic substance as being three or four times as broad as the perpendicular height, a term which he uses to express what constitutes hair, nails, claws, feathers, &c. It consists, he remarks, of thin plates of some breadth and in some of very considerable length, their breadth and length in some degree corresponding ten or twelve miles an hour, which they are commonly the

broadest, but not always so. The plates differ in size in different parts of the same month, more especially in the Large Whalebone Whale. They are placed, continues Hunter, 'in several rows, encompassing the outer skirts of the upper jaw, similar to teeth in other animals. They stand parallel to each other, having one edge towards the circumference of the mouth, the other towards the centre or cavity. They are placed near together in the Piked Whale, not a quarter of an inch from each other, yet within the greatest distance, yet differing in this respect in different parts of the same month; but in the Great Whale the distances are more considerable. The outer row is composed of the longest plates; and these are in proportion to the different distances from the edge of the jaw. As the plates are fourteen or fifteen feet long and twelve or fifteen inches broad; but towards the anterior and posterior parts of the mouth they are very short, they rise for half a foot or more, nearly of equal breadth, and afterwards shelf off from these portions of the whalebone, and are termed the teeth. They are termed the "toothed" or "darker" whalebone; the inner plates, corresponding to the termination of the declivity of the outer, and being shorter and shorter till they hardly rise above the gum. The inner rows are closer than the outer, and rise and extend from the gums in a straight line, and are gradually, or at least partly, divided by longitudinal slits. The outer rows, the plates of which are constantly changing, correspond to the termination of the declivity of the outer, and are shorter and shorter till they entirely pass out of sight; the plates of the outer rows laterally are not quite flat, but make a serpentine line; more especially in the Piked Whale, the outer edge is thicker than the inner. All round the line made by the inner edges, the whalebone is white, head, which is formed along with the whalebone, and wears down with it. The smaller plates are nearly of an equal thickness upon both edges. In all of them the termination is in a slanting line. If it be supposed, as the plate was spun into innumerable small parts, the exterior being the longest and strongest. The two sides of the mouth composed of these rows meet nearly in a point at the tip of the jaw, and spread or recede laterally from each other as they pass back and at their posterior ends, in the Balcena, they make a sweep inwards, and come very near each other, just before the opening of the oesophagus. In the Piked Whale there were above three hundred in the outer rows on each side of the mouth. Each layer terminates in a gradual convexity inclined to the outer edge of the mouth, answering to the gradual diminution of their length; so that the whole surface, composed of these terminations, forms one plane, rising gradually from the roof of the mouth; from this obliquity of the edge of the outer row is the whole substance of the mouth, it is formed of two layers, and so arranged that a piece of skin, of any thickness, when placed on it, forms the whole base, but not exactly, as it makes a hollow curve, which increases the base. The whole surface resembles the skin of an animal covered with strong hair, under which surface the tongue must immediately lie when the mouth is shut. The curves of the whalebone, as far as the whole edge, is of a brown colour, and a little lighter where the fish is deepest. In the Piked Whale, and is darker in the Large Whale. In the Piked Whale, when the mouth is shut, the projecting whalebone remains entirely on the inside of the lower jaw, the two jaws meeting everywhere along their surface; but how this is in their inner view and substance is difficult to say. The horizontal plane made by the lower jaw being straight, as in the Piked Whale; but the upper jaw being an arch which cannot be hid by the lower. I suppose therefore that a lower upper lip, meeting as low as the lower jaw, covers the whole of the outer edges of the external rows. The whalebone is continually wearing down, and renewing in the same proportion, except when the animal is growing it is renewed faster and in proportion to the growth. The formation of the whole surface, which is formed of the mouth, is in some parts more gradual, and in one respect similar to that of hair, horns, spurs, &c.; but it has besides another mode of growth and decay equally singular. These plates form upon a vascular substance, not immediately adhering to the lower jaw-bone, but having a broad base to fovea singular. This substance, which may be called the nidus of the whalebone, sends out (the above) thin broad processes, answering to each plate, on which the plate is formed, as the cock's spur or the bull's horn, on the bony core, or a tooth on its pulp; so that each plate is necessarily hollow at its growing end, the first part of the growth taking place on the inside of this hollow. Besides this mode of growth, which is common to all such substances, it receives additional layers on the outside, which are formed from the albumen, or vascular substance extended along the surface of the jaw. This part also forms upon it a semi-horny substance between each plate, which is very white, rises with the whalebone, and becomes even with the outer edge of the jaw, and the termination of its outer part forms the head above mentioned. This intermediate substance fills up the spaces between the plates as high as the jaws, acts as abutments to the whalebone, or is similar to the alveolar processes of the teeth, keeping them firm in their places. As both the whalebone and the intermediate substance are constantly growing, and as we must suppose a determined length necessary, a regular mode of decay must be established, not depending entirely on chance, or the use it is put to. In its growth three parts appear to be formed; one from the rising core, which is the centre; a second on the outside, and a third below the intermediate substance. These appear to have three stages of duration; for that which forms on the core, I believe, makes the hair, and that on the outside makes principally the plate of whalebone; this, when got a certain length, breaks off, leaving the hair projecting, becoming at the termination very brittle; and the third or intermediate substance, by the time it rises as high as the edge of the skin of the jaw, decays and softens away like the old cuticle of the sole of the foot when steeped in water. The use of whalebone. I should believe, is principally for the retention of the food till swallowed; and do suppose the fish they catch are small when compared with the size of the mouth.'

(Hunter On Whales.)

Example, Balena mysticetus.

Description.—Colour velvet-black, grey, and white, with a yellow tinge. Back, greater portion of the upper jaw, part of the lower, fins, and tail, black. Lips, fore part of lower jaw, sometimes a little of the upper, and a portion of the abdomen, white. Eyelids, junction of the tail with the body, part of the axilla of the flippers, &c. grey. The under the whale, the more white and grey is there upon it; some are piebald all over. The surface of the body is rather furrowed. The head is very large, forming nearly a third of the whole bulk, the under part, the outline of which is given by the jaw-bone, flat. The lips enclose the whole surface, which is without hairs. The rounded edges like a boat upside down, so as to shut in the front and upper parts of the cavity. On the most elevated part of the head are situated the blow-holes, two longitudinal apertures like the holes in the belly of a violin, and from these is issued the song of the whale. This is above three hundred of these plates of whalebone on each side of the jaw, enclosing the tongue between their lower extremities and themselves covered by the lower lip. The body is thickest a little behind the flippers, near the middle of its length, where it gradually tapers conically towards the tail, and, slightly, towards the head. There is no dorsal fin. The flippers, about nine feet long and five broad, are placed about two feet behind the angle of the mouth, and cannot be raised above a horizontal position. The horizontal tail is flat and semicircular, situated in the middle; the two lobes somewhat pointed and turned a little back-
wards. The eyes, not much larger than those of an ox, have a white iris, and are situated on the sides of the head about a foot obliquely above and behind the angle of the mouth, so that they appear to be sunk in the water, but not above it. The size of this whale has been supposed to have been greatly exaggerated by old statements. Eighty and a hundred feet were mentioned as a frequent length, and many accounts more than doubled the figure. At present, six, three, or seven feet appear to be the extreme length of a full grown Mysticete. Mr. Scoresby, who has elucidated the history of this whale as satisfactorily as Mr. Beale has that of the Sperm Whale, and who was personally concerned in the capture of three hundred and twenty-two, found none that exceeded six feet. It should be remembered however, in criticising old accounts, that the great persecution which these animals have long undergone and still undergo, while it reduces their members, is in favour of longevity.

Geographical Distribution.—The habitat usually assigned to this whale is the most extensive: thus M. Lesson states that it inhabits all the seas of the globe, especially the two poles; but it is not improbable that the Whalebone Whale or Black Whale of the South Seas, Balæna Australis, Desmoulin, Balaena Antartica, Less., which has every appearance of being distinct, and moreover of being infested with cirrhiped parasites (Tabicinella, Cornula, &c.) of different species from those which infest the Greenland Whale, has been mistaken for the last named cetacean. Multitudes of the Southern Balaena were seen by Captain James Ross, R. N., in very high southern latitudes during his last expedition.

The Common Whale, Greenland Whale, or Great Mysticete appears to be the genus of Aristotle (Hep. Anim. III. 12.): it is the Balaena Francæ and Balaena Ordinarie of the French; Gronlands Walffish of the Swedes; and Morffl Cuffredins of the ancient British.

Habits, Food, &c.—This species seems to hear acutely and swim very well in the water, such as fishing, &c. in rough weather: but a sound produced in the air, a loud shout for instance, when the whale is only at the distance of a ship's length, is disregarded. The usual rate of swimming seldom exceeds four miles an hour, but they will descend with a velocity of eight to ten miles an hour, and one of these whales when alarmed can sink in five or six seconds far beyond the reach of a human enemy. The Mysticete seldom remains at the surface to breathe longer than two minutes, during which period it blows each time. It then descends for five or six minutes; sometimes, when on its feel, for fifteen or twenty minutes. Though Mr. Scoresby states that it has no voice, it makes, he observes, a loud noise in blowing. The spout is ejected some yards high, and has the appearance of a puff of gunpowder. They blow strongest, densest, and loudest, when alarmed, or after a long stay under water.

A very considerable portion of the feeding grounds is occupied by what is termed "green water," which swarms with minute life, and has been carelessly examined and described by Mr. Scoresby. The smallness of the gullet is only fitted for swallowing small animals, such as the Clito borealis, numerous specimens of which, the Whale's Food of the Greenland Whalers, will be found in the preparation Nos. 23 A of the Physiological series of the Museum of the Royal College of Surgeons in London. This small mollusk is said to constitute the chief support of the Mysticete, and the structure and disposition of the whalebone plates, illustrated in the preceding preparations, explain how these or any other small species of animal are retained in the capacious mouth of their devourer, while the water taken in along with them drains through the interstices of the plates. When the Mysticete feeds, it swims rapidly below the surface with open jaws; a stream of water enters, and with it myriads of small marine animals; the water finds an outlet at the sides, but the thick internal hairy apparatus of the whalebone does not permit one of those animals to escape.

Nine or ten months is supposed to be the period of gestation, and the mother is so attached to her young one, or "sucker," as it is termed, that it is often struck as a snare to the affectionate parent, for she will not leave it, and falls a victim to her maternal love. Mr. Scoresby illustrates instances of this kind which cannot be presumed, much less witnessed, without great pain by any person of ordinary humanity. Such a mode of capture seems hardly justifiable, whilst it must be ruinous to future prospects.

This species is generally found alone or in pairs, excepting when many individuals are attracted to some abundant feeding ground, or to a desired locality, such as the vicinity of ice-bergs.

Utility to Man.—To the Esquimaux and the Greenlander this species is all in all. They eat the flesh and fat with indescribable relish. The membranes of the whalesmen serve them for clothing, and the thin transparent petrionemodium admits light through the windows of their huts whilst it keeps out the weather. The bones are made into props for their tents, or aids in the formation of their boats, and supply them with harpoons and spears for the capture of the seal, and greater sea-birds. The sinews divided into filaments are used as thread for sewing their dress, &c. Some have stated that pickled and boiled blubber is palatable, and that the tail, raw parched, and then fried, is agreeable eating. The flesh of the young whale is said to be by no means indifferent food. To civilized nations, the oil made from its fat or blubber, and the whalebone, have long made it a great commercial object. [Fisheries, vol. x, p. 268.]

The Greenland Whale.

To Mr. Scoresby's well-known book we must refer for further interesting and amusing particulars. The history of the Balaenoptera, or Orca, some of which grow to eighty or a hundred feet in length, may be found in the works of Lacépède, and of Baron Cuvier and M. F. Cuvier.

In the Fauna of New Zealand, published at the conclusion of Dr. Dieffenbach's work, Mr. I. E. Gray figures a whale which he is induced to regard as a new species, and names Balæna antipodan. The description is taken from a drawing engraved in the book. It is the Tuka pera of the natives. The specimen was sixty feet in length. The following cut is reduced from Mr. Gray's plate.

Balæna antipodan. (Gray.)

**Fossil Cetaceans.**

The fossil remains of cetaceans have hitherto been found in the tertiary formations only. Those bones from the Portland Stone, which were at first thought to belong to whales, proved to belong to the genus Ceratoneurus, Owen, the most gigantic of all the fossil reptiles (See Professor Owen's Report on British Fossil Reptiles). Dr. Buckland, in his Bridgewater Treatise, remarks that the seas of the Miocene and Pliocene periods were inhabited by marine Mammmals, consisting of Whales, Dolphins, Seals, Walrus, and the Laminant or Manatee, whose existing species are chiefly found near the coasts and mouths of rivers in the torrid zone. The presence of the Laminant in New Zealand adds another argument to the view that arose from the tropical character of many other animals; even...
of the latest tertiary strata, in favour of the opinion that the climate of Europe maintained a high, though probably a gradually decreasing temperature, even to the latest period of the tertiary formations.

Phytophagous Cetacea.

Cuvier figures and describes the remains of a Manatee differing from the existing species. Specimens were collected from various parts of France, and he states it to be very certain that an animal of the genus Manatus, a genus now peculiar to the torrid zone, inhabited the antient sea which has covered Europe with its shells at an epoch posterior to the formation of the chalk, but anterior to that in which the gyposm was deposited and the Palaeotherium with its contemporaneous genera lived on the soil of France. (Out. Foss.)

M. Hermann von Meyer, in his Palaeologica, notices this fossil herbivorous cetaceum under the name of Manatus. He also refer to another Manatus under the name of Manatus fossus, Harlan. (Fonna Americ. Journ. of Philad. IV.) See post, last paragraph of the article.

Zoophasous Cetacea.

Cuvier notices and figures with an accurate description the remains of a fossil dolphin approaching the Grampus and Delphinus globiceps from Lombardy, the skeleton of which was found nearly entire by M. Cortesi; and another with the remains of the lower jaw from the department of Landes. Also a fossil dolphin closely approximating the common dolphin from the same locality, and another from the calaisse grotto of the department of Oune. (Out. Foss.)

Meyer refers to these and another (Grateloup, Sbem. d. Sc. Phys. iii., s. 56, t. 36; Taylor, Magaz. d. Hist., March, 1830, s. 262) giving the following names.—Delphinus Cortesi, Delphinus macrogenius, Delphinus longirostris. (Paaleologica.) See post, last paragraph of the article.

Monodon.

Cuvier collects notices of fossil fragments of the Narwhal from Parkinson and George.; he adds, that he himself was not able to procure a piece in the cabinet of Natural History of Lyons which had formerly been in that of Penta-

Lozi. (Out. Foss.)

Ziphius (fossil only).

Cuvier founded this extinct genus, which approximates the Cachalot and Hyperoodon. A crania discovered on the coast of France, and disinterred in excavating the docks at Antwerp, and on a fragment in the Paris Museum. On these materials he rests three species, viz.—Ziphius cana-

viatus, Ziphius planirostris, and Ziphius longirostris, the remains of which he figures and describes. (Out. Foss.)

Zeuglodon.

The arrival of Dr. Harlan in this country with some of the remains of his Basilosaurus, which he and others con-

sidered to be a fossil reptile, and the permission given to Professor Owen to see the specimens of those that he had brought the latter to come to the conclusion, that the alleged Basilosaurus was not reptile, but a cetaceum. This he has satisfactorily proved in his paper read before the Geologi-

cal Society of London, in January, 1839, and published in the ninth volume of the second series of that Society's Transactions. The parts brought over by Dr. Harlan were two portions of bone belonging to the upper jaw; the larger one containing three teeth, the smaller one the sockets of two others. The microscopic characters of the texture of the teeth were strictly of a mammiferous charac-

ter, and the nature of their investing substance limited the comparison of them with those of the few mammals in which the teeth are devoid of enamel. Among these are the Eolitans, Mammuthus, Mammuthus, and its con-

gener, the Morse, the Dugong, and the Cachalot. It is to the teeth of the Cachalot and Dugong that those of the so-

called Basilosaurus offer the nearest resemblance, and Professor Owen conceives that its position in the natural system was in the same order, intermediate between the Cachalot and the herbivorous species. Dr. Harlan, who examin-

ed with the Professor the sections of the various teeth on which this conclusion was founded, himself suggested the propriety of substituting another generic name more

in accordance with the true affinities of the animal. In recapitulating the chief points of evidence which, when Professor Owen read his paper, could be brought to bear on the question of those affinities, he observes that it may be stated that the form of the humerus, though unlike that of any known vertebrate animal, yet approaches much closer to the mammanian than to the saurian type; the vertebrae which Professor Owen examined not only pre-

sented a strictly mammanian organization, but also the cetaceous modification of that type. The teeth being of two kinds, some with single, others with double fangs—being freely implanted in distinct sockets,—consisting only of dentine and cementum, hence these presenting an inti-

mate structure most closely resembling that of the same constituents of the teeth of certain aquatic mammals, as the Dugong.—afford, the Professor observes, a body of evidence which is conclusive as to the class of Vertebrata to which the extinct animal belonged, and point with a high degree of probability to the order and family to which it bore the closest affinities. 'The teeth,' says Professor Owen in conclusion, in their combination of an exagger-

ated condition of the conjugal form—which is but in-

dicated in certain teeth of the Dugong, with two distinct fangs, in their oblique position in the jaw, and the irregu-

lar intersepses of their alveoli,—present very striking peculiarities; and when to these dental characters we add the remarkable and abrupt contraction of the distal end of the humerus, which is in the teeth freely provided with an arti-

culating surface for a ginoglynd joint, and its remarkably diminutive size,—a cetaceous character, which likewise is here carried to an extreme,—and when we also consider the dense laminated structure of the ribs, and the third exaggeration of a cetaceous structure in the extreme elonga-

tion of the body of the caudal vertebrae,—we cannot hesitate in pronouncing the colossal Zeuglodon to have been one of the most extraordinary of the Mammalia which the revolutions of the globe have blotted out of the number of existing beings.

In the American Journal of Science for April, 1843, is a Notice of the discovery of a nearly complete Skeleton of the Zeuglodon (Zeuglodon) of Owen (Basilosaurus of Har-

lan) in Alabama; by S. B. Buckley, A.M.

The entire length of the skeleton, including the head, is described as nearly seventy feet, and was imbedded in a marly limestone soil on the plantation of Judge Creagh, the same gentleman who had forwarded the bones to Dr. Harlan, some of which were brought by the latter to London as above noticed. This discovery entirely corroborates the conclusions to which Professor Owen was led in the memoir above quoted. Bones of this gigantean fossil cetacean have been also found near the Washita River in Louisiana, and have been seen in Washington County, Mississippi: from

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 thence, Mr. Buckley adds, they have been found in several places as far east as Claiborne, on the Alabama River. The skeleton is now at New York.

*Balaenoptera.*—Cuvier figures and describes the skeleton of a fossil whale, which he considers to have been a subgenus of *Balaenoptera,* or Orcaul, found in Lombardy by M. Cortesi, on the east flank of Monte Pulgnacuso (Apenines). He says that the skeleton calculated from the entire length of twenty-one feet, French, observing that if the animal was adult, it was a very small *Orcaul.* Another skeleton of the same species, not more than twelve feet five inches long, was also discovered by M. Cortesi in similar beds and in a branching valley, near a small stream which falls into the Chiavena, one of the tributaries of the Po. *(Ost. Foss.)*

*Balaena.*—Numerous remains of *Balaena* have been found in the tertiary formations. Cuvier mentions a considerable number of ribs, vertebrae, and other parts, which were found at the Rue Dauphine at Paris, in 1779. Daubenton came to the conclusion that the whale to which it belonged must have been a hundred feet long; but Cuvier on satisfactory calculations reduces the length to sixty, and states his opinion that there are some places which a whale from Dr. Mantell detected the remains of *Balaena* in Sussex (Brighton Chiffs). A narwhal and porpoise appear to have been found in alluvial deposits of the district noticed in the *Geology of the South-east of England.* We are informed by the Edinburgh Phil. Journal, for instance, which have occurred in Scotland, and to Hermann von Meyer's *Palaeologica,* *(Balaena;* Wallfisch,* p. 100,* for reference to authorities on this subject.

Described by Brandon in 1763, *Batresaurium Ratktkii,* and which occurs in the tertiary limestone of Taman, has, we have reason to believe, attracted the notice of M. Murchison, Count Keyserling, and M. de Neurville, as a new link in the animal series, and more allied to the herbivores than to the Delphinia.

Whalley. *(Lancashire.)*

*Wharf.*—A place constructed or set apart for the loading and unloading of goods. In this sense the word includes the quays or docks and landings by which goods are unloaded and landed by cart, or floated, and to which vessels are referred for wharfage, and which is used for the purpose of storage, and sometimes of repair. Wharfs in docks and similar situations are made legal by special acts of parliament, as the London Docks, &c., and there are some places which are referred to as wharfs by the Custom-House of London, and which have been used as wharfage, as at CHEPSTOW.

For the use of a wharf certain rates of compensation are usually charged, which are called wharfage, and the act 22 Car ii. c. 11, (with repeals) and subsequent acts. The sea-beach, or natural ground on the banks of a river or canal, is not a wharf. Wharfs in docks and similar situations are made legal by special acts of parliament, as the London Docks, &c., and there are some places which are referred to as wharfs by the custom-House of London, and which have been used as wharfage, as at CHEPSTOW.

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No goods except diamonds and bullion, fresh fish of British taking, and turbot and lobsters fresh, however taken or imported, are allowed to be unshipped from any ship arriving from foreign parts beyond seas, or landed or put on shore, except as legal quays appointed by her majesty for landing of goods, or at some wharf appointed by the commissioners of customs, for the landing and keeping of goods by the custom-House till the duties are paid or the goods bonded.

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(Ellis's *Laws of the Customs,* vol. ii, p. 90; McCulloch's *Dictionary of Commerce.)*

*Wharton,* Thomas Wharton, Marquess of. The son of Philip, Lord Wharton, one of the few noblemen who adhered to the parliament in the civil wars, and who is characterised by Clarendon as 'a man very fast to that side,' by his second wife, Jane, daughter and heiress of Arthur Goodwyn, of Upper Winchendon, in Buckinghamshire, Esq., Mr. J. T. Rutt, in a note to a edition of Burton's 'Diary' (i. 367), makes it clear that he is the son of whom Lord Wharton's lady is recorded in the Diary to have been delivered on Tuesday, 13th January, 1641—an event which his lordship's relation, Sir Thomas Wharton, is stated to have related to the writer, with great joy; but this we apprehend must be a mistake.

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Wharton. *(Rev. Henry.*)

Wharton, Rev. Henry, was born 9th November, 1615, at Worstead in Norfolk, the son of Mr. Edmund Wharton, the descendant of an antique family, and afterwards rector of Saxlingham in the same county, was then vicar. After being taught Latin and Greek by his father, he was admitted to Christ Church, Oxford, 2nd February, 1627, and Michaelmas in the same year was chosen to one of the scholarships...
 founders by Mr. Matthew Stockys, who was his
grateful. Having taken the degree of B. A. in 1684, he
sted in his college till 1688, when he was taken into
employment of Dr. William Cave, then engaged in
the compilation of his 'Scriptorum Ecclesiasticorum Historia
Literaria,' in which Wharton assisted him not only as an
assistant in the English histories, but also in the
arrangement of materials, that a dispute afterwards arose as to his
cleim to be considered the author of a considerable part
of the work. Cave himself acknowledges his obligations in
large terms in his Preface; but after Wharton's death he
addressed his 'Epitome of the History of the Church,' which
printed in Chalmers' 'Biographical Dictionary,' in con-
truction of an account of the matter which Wharton had left
behind him. The publication of Cave's work (in 1689)
רה immediately made Wharton's name known, and brought him
lute reputation as a young man of remarkable talents
and acquirements. The year before it appeared he had
been ordained deacon, and had also taken his degree of
M.A., and he was now sought out by Dr. Tenison, then
vicar of St. Martin's, afterwards primate, who employed him
'to according and edit manuscripts of 'The Incurable
Scepticism of the Church of Rome,' written by
Jean de la Placectte, the French Protestant divine, which
it was thought desirable to make public in an English
dress. He was also, on Tenison's recommendation, en-
gaged by the London Printing House, and his name therefore
is left
Dish, Tenison, which was
published in the same stroke. In 1688, he
сollated the following year both to the vicarage of Min-
ster in the Isle of Thanet, and to the rectory of Chatham.
The catalogue of the works which he wrote or compiled, or
in the publication of which he was concerned from his first
appearance, is too long to be here extended, but his
writings, which he continued to publish or edit even before he had taken priest's orders,
tell of the kind of his character. In life, though not
fixed to his Sermons, and, abstracted thence, in the 'Bi-
graphia Britannica.' They were principally directed
against popery. The most important was a quarto volume,
entitled 'A Treatise of the Celiacy of the Clergy, wherein
the Rise and Progress are historically considered,' which
appeared in 1688, the imprimatur being dated 3rd
November, 1687. In 1691 he brought out at London, in two
volumes, folio, his great work, entitled 'Anglia Sacra,'
being a collection of original histories of archbishops and
bishops, from the earliest times to the year 1540. In this undertaking his patron was
Bishop Lloyd, who appears to have generously defrayed
all the expenses of transcribing the manuscripts and printing
the work. Unfortunately very much of it has been
lost by fire; but what is to be seen appears to be a
masterly effort of the printer and of the amanuenses; but the original matter
that Wharton has supplied evinces a great command of
antiquarian learning; and of many of the pieces in the
collection there is as yet no other edition. The 'Anglia
Sacra' is interspersed with all its defects, still retains a
value.
In 1692 Wharton published, in 8vo., 'A Defence of
Pluralities,' which was held to display great ability. In
1693 he edited, in a 4vo. volume, some hitherto unpub-
lished works of George Whitefield, entitled 'Opera quaedam Theologiae,' &c.; and the same year,
under the fictitious name of Anthony Harmer, he pub-
lished an 8vo. pamphlet entitled 'A Specimen of some
Errors and Defects in the History of the Reformation of
the Church of England,' which was, however, not
published till 1740.
D.D.' Burnet replied, acknowledging the ability of his
assistant, but complaining of his bitterness and bad
temper; and Wharton did not continue the contro-
versy. In 1695 appeared another of the most elaborate
and learned of the works of that period, which, though
brought forward in the 'History of our ecclesiastical
history—the first volume, in folio, of
'The History of the Troubles and Trials of Archbishop
Laud.' This is Laud's own account, written during his
imprisonment in the Tower, accompanied with his Diary of
his imprisonment, which was written about the same time,
which had been placed in Wharton's hands by Archbishop
Sancroft a few days before his death. A second volume,
consisting of further collections relating to Laud, was left
ready for the press by Wharton, and was published under
his father in 1703.
Wharton died at Newton in Cambridgeshire, worn out
by his labours, on the 5th of March, 1695. Two octavo
volumes of his Sermons were printed after his death; and
his papers, among which were several transcripts of old
manuscripts, which had been purchased by Archbishop Tenison, and are now in
the library at Lambeth. The second edition of Cave's
'Historia Literaria,' printed at Oxford, in 2 vols. folio,
1746, 1748, is enriched with many additions from Wharton's manuscripts.

WHARTON, PHILIP WHARTON, DUKE OF, was
the son (we believe the only son) of Thomas, Marquess of
Wharton, and was born in December, 1698. Having early
shown great quickness of parts, he was carefully educated
at Eton, and admitted as a pensioner of Trinity College, his
ambition was to make himself both a great orator and a great
patriot; the latter term meaning in his lordship's notion
not only a pure Whig in politics, but further, it would seem,
'a Presbyterian in religion. Either the training he received,
or, possibly the natural whig, which he had come
into the world, proved more favourable to the intellectual
than to the moral progress of the boy. His first folly was
an early one, his getting himself married clandestinely at
Tideway, when he was scarcely sixteen, to the daughter of
Major-General Holcroft, of Trent, who was a girl of
much too much, that it is said to have killed him in six
weeks. The old Marquess died 12th April, 1715; and the
Marchioness, also, it is affirmed, killed herself in effect by
her husband's death. He was, however, the father of a
son, who was born in the course of the next year. Yet it is
admitted by Wharton's biographers that, although the match he had made was
'so ways suitable to his birth, fortune, or character, and
far less to the great views which his father had of
disposing of his son in such a manner as would bring a
considerable addition to the fortune and grandeur of his
illustrious family,' the lady was unobjectionable, except
upon the score of the inequality of her condition, and 'der-
served infinitely more happiness than she met with in this
ill-fated connexion.' He was married again, shortly after the
marriage; in the beginning of 1716 the Marquess, probably in obedience to directions left by his
father, went abroad with a French huguenot governor to be
educated or confirmed in strict Presbyterian principles at
Geneva. In passing through Germany, he was
gratified by receiving an order of knighthood from some
petty court; he also immediately began to run in debt;
his Huguenot governor only disgusted him by his 'dry
moral precepts and the restraints he endeavoured to lay
upon his pupils.' He returned to France, and after a
brief space, cutting all entanglements, he left the
Huguenot behind, and, 'as if he had been flying from the
plague,' set out post for Lyon, where he arrived on the
10th of October, 1716.
The next proceeding was to write a letter to the President, declaring that he would
forward with the present of a fine stallion; the
Chevalier in return sent him to his court, where he spent
a day, and, it is said, accepted from the sol-daissant
king the title of Duke of Northumberland. After this he
presented himself in Paris, where he visited the court of
James II. at Saint Germain, and borrowed 2000l. from her;
without, however, declining the attentions of the English
ambassador, Lord Blair, at whose table he repeatedly dined.
When, however, the occasion to get the money failed, he
was obliged to pawn her jewels to raise it, he is asserted
to have employed it in promoting the interest of his
family in England: at the same time he told a friend
who remonstrated with him, that till he could repay what
he had borrowed and not Germania, he must then
return; when that obligation was discharged he would return to the
Whigs. 'We have heard it credibly reported,' says his
original biographer, 'that it was the too great strictness
of his trustees, particularly of the Lord L—re, who was
very much displeased that he did not make him arrangements
anyway suitable to his quality and estate, that first drove
him into those measures which afterwards proved so fatal
and destructive to him. We have also had it from good
hands, that it was the great antipathy he conceived against
the noblemen of his own persuasion, and the care, that gave the Marquess a sort of aversion even to
his principles, and made him in a manner resolve not to
be of the same side with him.'
Having signalized his stay in Paris by sundry extravagances, he returned to England in December; but soon after set out for Ireland, where he was immediately allowed to take his seat in the House of Peers, although as yet only in his eighteenth or nineteenth year. Whether he had purchased this indulgence by any engagement with the port the government does not place on the book that side with all apparent sincerity and zeal, and speedily raised himself to such distinction by the figure he made in debate, that, under age as he still was, it was thought proper to appoint him to the highest offices. He was, on the 20th of January, 1718, he created Duke of Wharton. If we put aside those bestowed on members, legitimate and illegitimate, of the royal family, this was certainly the most extraordinary creation of the government. He was no more a politician and is not even regarded as the most remarkable passage even in Wharton's singular career. Notwithstanding the practice which then prevailed, of conferring that dignity with much less reserve than at present, the attainment of it in such circumstances makes a strong impression which the talents of the young nobleman made at his first appearance on the political stage.

It was probably not till after he had attained his majority, early in 1720, that he took his seat in the English House of Lords. The same year he was chosen a member for Bassetlaw, but rejected the motion to take the bill which the debates on the 5th of April in that year. Up to this time he is said to have continued to support the ministry; but he now warmly joined the opposition to the great government measure of the South Sea Bill, in the debate on which he was not without some effect. He was one of those who, on this occasion, took place and credit to the King of Spain, he was appointed by the Conde de las Torres one of his aide-de-camp. Here, we are told, he was often in the trenches, and exposed himself wherever any service was going forward; but his conduct appears to have been of a management and bravado of real gallantry. 'He went one evening,' it is related, 'close to the walls, near one of the posts of the town, and either called to, dared, or threatened the soldiers of the garrison.' They asked who he was, he told them he was a colonel of regiments. The Duke of Wharton: 'and, though his grace appeared there as an enemy, they suffered him to return to the trenches without firing one shot at him; had they done otherwise he must inevitably have perished.' The only thing said after this was, 'Oh, what a fine man!' and that the bill might pass, he delivered a long and able speech, a full report of which was soon after published. This is the last speech of the Duke of Wharton's that is noticed in the "Parliamentary History." His estate, worth, it is said, 16,000l a year when he came to it, had by this time become so involved, that his property was placed in the hands of trustees, for the benefit of his creditors, and he was allowed only 1200l per annum. He now, perhaps in the hope of making money by the speculation, set up a bank and opened it, and the country gentlemen of himself made a member of the Cash-Chandler's company in the city of London, that he might speak and vote at common-halls and other civic meetings. But he soon got tired of that unprofitable work, and giving out that his intention was to return for a few years, he went off to the continent, apparently in the early part of the year 1724. Proceeding first to Vienna, he made a distinguished figure at that court for a short time; then he set out for Madrid, where, says his biographer, 'his arrival alarmed the English minister so much, that two expresss were sent from Madrid to London, upon an apprehension that the duke was received there in the character of a minister himself, upon which his grace was soon taken under the protection of the king.'

This order he entirely disregarded: "His grace," says one account (Salmon, in 'Chronological Historian,' under date of 10th June, 1726), "being in a coach when it was delivered to him, contemnuously threw it into the street with his boot; and, signing himself, "a Roman Catholic." He 'endeavoured,' continues the writer of his life, 'to stir up the Spanish court not only against the person that delivered the warrant, but against the court of Great Britain itself, for exercising an act which was not only a breach of his majesty's treaty, but the subversion of his own supremacy, and the diminution of his Catholic Majesty's kingdom. After this he acted openly in the service of the Pretender, and appeared at his court, where he was received with great marks of favour.'
Some time after he is stated to have been in garrison at Barcelona, where he got into a quarrel with the Marquess de Rubire, governor of Catalonia, the end of which was that he retied with the fleet to Barcelona, but to repair to his quarters at Lerida. On this, we are told, giving way to melancholy, he fell into a deep consumption; so that, by the beginning of the year 1731, he had lost the use of his limbs, and was not able to walk from his bed to the table without assistance. After about two months he rallied somewhat, from drinking a mineral water in the mountains of Catalonia; but in May, having gone with his regiment to Tarragona, he became again as ill as ever; and, going back to the mineral spring, was again improved till he got to Lerida. This seeming a most astonishing fit to which he had for some time been subject, in a small village, and was utterly destitute of all necessaries, till some charitable fathers of a Bernardine convent, which happened to be near the place where he lay, hearing of his miserable condition, offered him what assistance their house afforded. After languishing in the convent for a week, he died there on the 31st of May, 1731, and was buried the next day by the monks in the same manner in which one of themselves was, and have been interred. His widow survived, in obscurity, till February, 1777, when she died in London, and was buried in Old St. Pancras Churchyard.

The account from which the preceding facts are chiefly derived was originally published in 8vo. at London, in 1731, under the title of 'Memoirs of the Life of His Grace Philip late Duke of Wharton, by an Impartial Hand.' It is prefixed to two octavo volumes published in 1722, entitled 'The Life and Writings of Philip, late Duke of Wharton,' but the first page of the eighth volume is one of the 'True Briton,' and the speech on the bill of pains and penalties against Atterbury, the paging of which is a continuation of that of the 'True Briton,' although it has a title-page of its own, and was published in 1727. There is another publication, in two volumes, 8vo., without date, entitled 'The Poetical Works of Philip, late Duke of Wharton, and others of the Wharton Family, and of the Duke's Intimate Acquaintance, particularly Lord Bolingsroke, Dean Swift, Lord Chesterfield, and the Hon. Mrs. Wharton, &c.' These two volumes however appear to have been all printed in 1727 (before the duke's death), with the exception of only this general title-page and a Life of the duke, which is substantially the same with the noticed above, and is here stated to be 'communicated by a person of quality, and one of his grace's intimate friends.' The volumes contain very little that is even attributed to the duke; but in the second are some letters in prose, addressed to Lady Wharton, his father, then in his 91st year, and the author of the 'Complaints and Sentiments of Jeremiah.' It is said that Ritson had at one time an intention of collecting and publishing the poetical productions of the Duke of Wharton, which however probably would not have been usually known, for the duke is per

The wheat of the Mediterranean climate, have looked upon all the cultivated wheats as mere varieties. There are however three principal varieties, so different in appearance that they elicit peculiar names. These are the hard wheats, the soft wheats, and the Polish wheats. The hard wheats are the produce of warm climates, such as Italy, Sicily, and Barbary. The soft wheats grow in the northern parts of Europe, as in Belgium, England, Denmark, and Sweden. The Polish wheats have been grown in the country from which they derived their name, and are also hard wheats. It is from their external form that they are distinguished from other wheats. The hard wheats have a compact seed nearly transparent, which, when bitten through, is short, and shows a white flour within. The soft wheats have the grains cultivated in Britain; they have an opaque coat or skin, and which, when first reaped, give way readily to the pressure of the finger and thumb. These wheats require to be well dried and hardened before they can be conveniently ground into flour. The Polish wheats have a long chaff which is much longer than the seed, a large oblong hard seed, and an ear cylindrical in appearance. It is a delicate spring wheat, and not very productive in the climate of England; hence it has only been occasionally cultivated by way of experiment.

The following cuts represent some peculiar varieties of wheat. The first is a compound ear, produced by very luxuriant vegetation, and is common in Egypt. The second is a slender wheata which the body of which is attached to the grain as to be separated only by passing through a mill. It is an inferior variety, but grows in less fertile soils. The third is the Polish wheat, with very long chaff and hard grains. The fourth is a variety which only has one end of chaff, which is a very peculiar and is not much cultivated. The fifth is common soft bearded wheat. If the awns of this kind are obliterated, it forms our common soft wheat. The circumstance of awns seems not to affect the hard wheats of the different species. They differ so much in length that the varieties of smooth-eared and bearded wheats run insensibly into each other.

The hard wheats contain much more gluten, a tough viscid substance which is very nutritious, and which, if converted into alcohol, would form a powerful agent in fermentation, or rising, as it is called, of the dough, which is essential to good light bread. The quantity of this varies with the soil and climate, from 5 per cent. in some soft wheats, to 30 per cent. in the hardest and most transparent. It is this quantity of gluten which causes the Italian wheats to be used exclusively for the rich pastes which form so large a portion of the food of that nation. The soft wheats contain the greatest quantity of starch, which fits them for the vinous fermentation, by which wines are produced, and which, with water and alcohol, for brewing or distilling, therefore, the soft wheats are the best. The distinction between the winter and summer wheats is one which arises entirely from the season in which they are sown. They differ very much in rising, and gradually accelerating or retarding their growths. The difference in colour between red and white wheats is owing chiefly to the soil; white wheats gradually become darker and ultimately red in some fertile soils, and the red wheats lose their colour and become first yellow and then white or rich, light, and mellow soils. It is remarkable that the grain sooner changes colour than the chaff and straw. Hence we have white wheats with red chaff, which on the foregoing principle is readily accounted for. The chaff retains the original colour when the skin of the grain has already changed to another. We state this on our own experience. The soil best adapted to the growth of wheats is a deep friable soil, with a dry subsoil. If this is not so naturally, it must be drained artificially, to ensure good crops of wheat. In such a soil, wheat may be sown every third year, with proper intermediate crops. Formerly the preparation for a crop of wheat was a clean fallow, followed by a certain addition of manure, the remark of which were thought sufficient for a crop of barley or oats; after which the fallow recurred. It was soon found out that, by this means, a crop of wheat would never go beyond an average; for it was then to be as much as possible the goal. But when manure was hurried on the land, the wheat failed, by being laid before it arrived at maturity. Thus a limit appeared to have been set to its increase. New modes of cultiva-
have shown that this was not without its remedy, and that it was recent manuring which caused the wheat to lodge; but that an increased fertility, produced by judicious preparation, enabled the land to bear crops of wheat far superior to what it ever could before. Wheat requires a soil in which the organic matter is intimately mixed with the earthy ingredients; where it can have a firm hold by its roots, and can at the same time strike the fibres of them downwards, as well as around, in search of food. When it meets with such a soil and is deposited at a proper depth, it vegetates slowly, pushing to the surface one cylindrical filament, while numerous fibres strike into the soil from the seed. These supply the plant with regular nourish-

ment, and in due time a knot is formed at the surface of the soil, from which several roots and stems branch out. This is called the tillingering of the wheat. The new roots near the surface soon become the chief source of nourishment, and in a rich compact soil, where there is room, numerous stems arise, forming a tuft, and each of those in turn bears a large ear well filled with seeds; so that from a very moderate quantity of seed a great return is produced. The strong stems supporting each other are well able to resist the effect of storms and rains, which would lay weaker plants level with the ground. The effect of abundant manuring immediately before the seed is sown is to produce too rapid a growth, weakening the straw, and increasing its quantity at the expense of the ear, which does not attain its proper development. This is called running to straw. All strong manures which contain many saline particles have this effect; which is corroborated by late experiments with salt-petre, nitrate of soda, and other saline compounds. They produce more straw and less corn, and hence are not found of the same use, when applied to crops which are cultivated for their seed, as they are for grass.

A certain portion of nitrogen is essential to the production of good wheat, as that element enters into the composition of the gluten, which will be found to abound in proportion as nitrogen exists in the soil, or can be supplied from the atmosphere. The experiments of Liebig have shown that the nitrogen of the atmosphere will not enter into the substance of plants, except in the form of ammonia, and hence the efficacy of manures has, of late, been estimated by the quantity of ammonia which they can produce. This theory however requires to be confirmed by experience, before it is at once adopted without limitation. Decayed vegetable matter, or humus, seems essential in a good wheat soil, and it may, in the slow progress of its entire decomposition, when it is continually absorbing the oxygen of the air, have some chemical effect on the nitrogen also, so as to make it of use in the vegetation, whether by first forming ammonia, or in any other way. Further experiments may perhaps throw a light on the subject. It is well known however that, provided a soil be compact, its fertility is very nearly proportioned to the quantity of humus which it contains, especially if there be calcareous earth or carbonate of lime in its composition. Lime has been often considered as the most efficacious manure for wheat, even more than dung. As long as there is organic matter in the soil, lime acts beneficially, and the richer the land which does not contain carbonate of lime already, the more powerful the effect of liming. But experience has proved that lime has little effect on poor soils, until they are first manured with animal and vegetable substances. To produce good wheat then, the land should be gradually brought to the proper degree of fertility, by abundant manuring for preparatory crops, which will not suffer from an over-dose of dung, and will leave in the soil a sufficient quantity of humus, which is blended with it, for a crop of wheat. Clover is a plant which will bear a considerable forcing, and so are beans, and both are an excellent preparation for wheat. The roots left in the ground from a good crop of either, decay slowly, and thus furnish a regular supply of food for the wheat sown in the next season. Potatoes also admit of much forcing, but the necessary loosening of the soil for this crop renders it less fit as a preparation for wheat. Experience has fully proved that, as a general rule, it is better to sow barley and clover after potatoes, and let the latter be succeeded by wheat.

Improved chemical analysis has discovered various substances in minute quantities in the grains and straw of wheat; and this has led to the doctrine that these substances, though essential to its formation, must be excellent manures for it, if they do not already exist in the soil in sufficient quantities. Most of these substances are found in all soils which contain a due proportion of clay. Silica in a very minutely divided state, and probably in combination with alumina or other substances most important to give due strength to the straw; and hence, in some soils, potash or wood-ashes which contain it may be advantageously used as manures to the young clovers preceding the wheat. The analysis of the ashes of grains of wheat chosen out of the ears, by Theodore de Saussure, who is generally considered an excellent authority, gives the following results:
Potash 15
Phosphate of potash 32
Muriate of potash 16
Sulphate of potash a trace.
Earth phosphates 44.5
Silica 5.5
Metallic oxides 0.25
Loss 7.5

The analysis of the ashes of the straw gave the following result:

Potash 12.5
Phosphate of potash 2
Muriate of potash 3
Sulphate of potash 2
Earth phosphates 6.2
Earth carbonates 3.5
Silica 51.5
Metallic oxides 1
Loss 7.5

The analysis of the ashes of the whole plant, when in blossom, gives of—

Soluble salts 41
Earthy phosphates 10.75
Silica 20
Metallic oxides 0.5
Loss 21.5

By comparing these results it will appear, that from the time of flowering to the maturity of the seed a portion of the soluble salts is converted into earthy phosphates; that silica accumulates in the straw, but not in the grain; and as potash is the principal means of rendering the siliceous soil porous, it may be made to give a very good return in soils which would otherwise have been thought fitted only for the growth of rye and oats. But then the texture and composition of these soils must have been greatly improved by judicious tillage and manure. When the heavy soils are properly ploughed and pulverized to render them mellow, the lighter are rendered more compact by marling, where this can be readily done, by adding composts in which the principal earth is compost, and especially by such plants as have the subsoil and long roots by which the soil is kept together, such as clover, lucern, sainfoin, and other grasses. If these plants have been well manured, and cover the ground well, keeping in the moisture, the soil will have become sufficiently compact to bear wheat. One ploughing is then quite sufficient, and if a heavy land-presser is made to follow two ploughs and press in the furrows, so as to leave deep smooth drills eight or nine inches apart, in which the seed can find a solid bed, there will be every probability of a good crop of wheat, which will not come up in regular rows, the roots being at such a depth as to run no risk of wanting moisture till the stem has arisen to its full height, and the ear is formed: a few showers at that critical time will make the grain swell, and insure a good crop.

On some soils it may not be judicious to attempt to sow wheat; but these are the poorest loose sands, which naturally would bear only oats and buckwheat; on these, unless they can be abundantly manured, it is much better to sow rye. When wheat is sown on light soils in good heart, it grows vigorously in spring, if it has not been injured by the frost, which is very apt to raise up the roots and throw them out of the ground. The driving of sheep over the field presses the roots into the ground, and prevents this throwing out; but a vigorous growth of straw is not always a sure sign of a good crop at harvest, as many farmers know by sad experience: what would be advisable in heavy soils is not always so in lighter. A heavy rolling in spring after a light harrowing is very useful at a time when the surface is moist. It closes the pores and checks the evaporation: and the tighter the surface can be made the better chance there is of a fair crop. The Norfolk rotation, as it is generally called, in which wheat is sown after clover, is the only one well adapted for wheat on light soils. The wheat will put abundantly for the turnips, and the land being freed from weeds, the barley which follows is generally a good crop; and the clover, which is sown in this, is trampled in the reaping and carrying of the barley: and there is only one ploughing from the time of sowing the clover to the sowing of the wheat. If this be dabbled on the turnedeward of the clover, the land will receive another treading by the dibblers, the seed will be regularly deposited at a proper depth, and the preparation of the land is more likely to produce good wheat. On heavy soils the process must be varied; the surface, instead of being rendered more compact, will often be so bound as to require to be stirred by harrowing or hoeing before the wheat plant can properly erect itself. If, for example, one has good crops of wheat, he must not rest satisfied after he has ploughed, manured, and sown: he must watch the growth of this important crop daily, and use the means which experience and observation have suggested to assist the growth and to remove the causes of failure.

In heavy soils nothing is more detrimental than excess of moisture. Even in well-drained fields the water will stand too long in the furrows if there is not a proper outlet for it. The furrows should be well cleared out with the spade as soon as possible. The dibbling is often sufficiently done to prevent earth being thrown evenly over the surface of the stitches, and not left in an unsightly ridge, which crumbles down with the furrow at the first frost. In proper places and at regular distances deeper water-furrows should be dug out of the plough-soil, and plugged with a deep-tended line; and this should then be finished as is said above: so that if a heavy fall of rain should come suddenly, the water will have a regular course and outlet into the ditches which lie in the lowest part of the land, which is back-breaking to the farmer, and every time tending to produce moisture. It is chiefly in spring and when snow melts that there should be a daily inspection of the wheat-fields. An experienced eye going along the bottom of the ridges of a large field will discover at once whether there is any stoppage of the water; and by means of a spade or shovel it will be remedied with little trouble. When the surface binds, as it does in some soils, and prevents the access of air to the roots, the land is harrowed or hoed, and in a few days the effect will be apparent.

Soils which lie over a porous subsoil, or which by artificial draining have been so dried and mellowed that horses can go over the land at all times, without making such an impression as will retain water if it rains, may be driven over with drawn carts, without the least harm to the surface. There is the convenience of ploughing with a fixed turnfurrow; and thus a considerable portion is made productive which would be taken up by furrows, and perhaps produce weeds. But if the soil is of a tenacious quality, easily compressed when moist, and horses cannot safely be answered to have over it when wet, it is absolutely necessary to divide the land into stitches, or beds with furrows between them, in which the horses can walk while they draw harrows or any other implement over the land. All the implements should be so constructed that, if they have wheels, these may run in the furrows, so that nothing will disturb the evenness of the stitches, which should have a very gentle slope from the centre towards the two furrows which bound it. For spring crops this is not so essential, although it is advisable not to drive over the land when barley and clover are sown, because, when the surface is laid in double stitches, as is sometimes done, it is not very easy to lay it in narrow stitches again, at one ploughing, for wheat. No doubt a very expert ploughman can do so, but not to the advantage of the ploughmen if men are on the same farm. Even in very light soils, as in Flanders, narrow stitches with deep intervals are thought most advantageous.

It is a very common notion that good wheat and bean land are well adapted to the growth of roots, especially of such as are usually fed off the land by sheep, because the treading of animals is injurious in winter and spring, when these crops are usually wanted; and if they are catted off, the wheels and the horses make such impressions as are equally detrimental or more so. But all roots, even the
white turnip, will grow luxuriantly on heavy soils well prepared and manured; and they may be so managed as to be taken off before the winter, or even very soon after wheat harvest. The bulbs will not be so large, but they will be more succulent, and may be kept in various ways till they are wanted for the cattle. The land being ploughed immediately on the removal of the turnips, will, or, when mellowed by the winter's frost, may be sown in spring with beans, barley, or oats. The manure will be incorporated with the soil, even if it has been thrown on it, and the seeds of weeds, and thus can only be recommended on very compact soils. If the root crops are well cleaned, fallows may be avoided, or, at least, recur very seldom, and then only when root weeds have been neglected.

When the wheat has blossomed, and the grain in the ear is fully formed, it should be watched, and as soon as the seed feels the consistency of tough dough, and the straw is dry and yellow below the ear, it should be reaped. The skin of the ears, and the stalks are of a more palish green, and the wheat harden readily by mere drying, while the straw is better fodder for the cattle. It is found by experience that the increase of flour by adopting this method is very considerable.

It was the custom of our forefathers to cut the straw half, or two thirds, off before the grain was mature; but this was, that less room was required in the barn, and no seeds of weeds were carried there in the straw: but the loss of half the straw, which might have afforded litter or fodder for cattle, was overlooked: and if the weeds were not taken out before sowing, they could not be afterwards got rid of. Giving a little more trouble in winnowing and sifting the corn, they were left to shed their seeds on the land, and thus perpetuate its foulness, or add much to the labour of weeding the succeeding crops. The stubble or halms had been torn up, and the wheat only left standing, and this ploughed, and although this might make a very good shelter for cattle in a yard, when made into halm-walls, as they are sometimes called, there was a great loss of labour in weeding the yard over the flat straws. It is, therefore, the most approved mode of reaping now is that which is called an 'in and out' bagging in Middlesex and Surrey (Harvest), but the most expeditious is mowing, which, by means of a cradle or scythe, may be done so regularly as to allow all the corn to be tied up in bundles, or to have all the weeds cut up with the corn, and when the whole is threshed, the seeds of the latter are winnowed out and burnt: thus they cannot infest the land, and there is double the quantity of straw to convert into manure—a matter of great importance. Mr. T. S. Henslow, in his 'Fruits', of the choice of the seed on turnips in the yard, chiefly for the sake of their dung.

The choosing of wheat for seed is a matter of great importance. Some farmers like to change their seed often; others sow the produce of their own land continually, and have found that their soil and their wheat are improved by this. The fact is, that it is not always the finest wheat which makes the best seed; but it depends on the nature of the land on which it grew. Some soils are renowned far and wide for producing good seed, and it is well known that this seed depends, in some degree, on the state of the ground into which the seed is sown. Many places have been noted for this peculiarity; and among them we may mention the parish of Burywell, in Cambridgeshire: the wheat which grows there is most sold at a price considerably above the average. It has been ascertained of the owners of this wheat that the best adapted seed for this soil is the glum, the best adapted to the land is the seed with the slender, the most suited to the land is the seed which contains most gluten is preferred, as we observed before; but to produce a perfect vegetation, there should be no excess of this substance, nor any deficiency. The seed also should have come to perfect maturity. This latter condition is not attained by being mellowed over a couple of wood or a cask, without untying them, by which means the ripest seed falls out. The proportion between the starch and gluten is easily ascertained by carefully washing the flour when the wheat has been ground. It is most convenient to tie up the flour in a cloth, which, shaken and beaten in water, will let all the starch pass through and retain only the gluten. The operation should be continued as long as the water is tinged with the white starch. Any one can readily make the experiment; and as the soft was very much in the proportion of the gluten they contain, the difference will be readily ascertained. This leads to a practical conclusion: if we wish to grow any peculiar sort of wheat for seed, and if we find that, by our preparation of the soil, or its original composition, we produce a wheat in which the gluten and starch are in a different proportion from that of the original, we may conclude that this is owing to more or less of acidulated matter in the soil, that is, more animal manure, or more vegetable humus; and by increasing the one or the other, we may bring our wheat to have all the properties of the original. This is a valuable discovery, and deserves to be fully confirmed by experience.

While the wheat is growing it is exposed to various accidents, which it is often difficult to foresee, and more difficult to guard against. The following are the diseases which may be generally prevented by a proper preparation of the seed before it is sown. [Burnet—Ea.; Smut.] Many corrosive substances have been recommended to steep the seed in, such as blue vitriol and arsenic, and those who have the means, or the face great confidence in them. It seems however that washing the seed well with plain water or with salt and water, and afterwards drying it with quicklime, sufficiently destroys the germ of the smut to prevent its propagation. The most common seed is in water in which we would of new prepared peat or the organic manures of Agriculture of England, Part I., is a valuable paper, by the Rev. T. S. Henslow, on the diseases of wheat. He describes the different fungi which produce the various diseases of pepper-brand, dust-brand, rust, and mildew: he doubts the existence of the fungus which attacks wheat plants, and makes it produce this ergot, instead of a healthy seed.

Another disease of the seed is called ear-cocksles, and is caused by extremely minute insects like eels, which fill the skin of the seeds, instead of flour. This insect, which is called Ergot, has been discredited as will probably find to float in the

Philosophical Transactions' for 1823. This disease is not so common as the smut and pepper-brand. It is probable, according to Mr. Henslow, that the animalca may be killed by exposing the grain to a certain heat, so as not to destroy its power of vegetation, but sufficient to kill the vibrio.

The wheat-midge (Cecidomyia tritici) is another external enemy, which does more harm to the crop than is generally known. It deposits its eggs at the root of the grain in the earth, and these ate the food of the grain, the maggot living on the nutritious juices which should produce the farina. The Hessian fly, which caused such depredations in America and Canada at one time, is a different species of the same fly. This deposits its eggs in the straw just when the rice is dried and we desire to refer the reader for further particulars to the paper above mentioned. Great attention has been lately paid to the introduction of the best and most prolific varieties of wheat, and by merely observing what ears appear most superior to others in a field of ripe wheat, and collecting these to be sown separately in a garden or portion of a field, the variety, which may have been produced by some fortuitous impregnation, or some peculiarity in the spot where it grew, and which might be perpetuated by barnyard birds or by selecting the seed which is best adapted to the soil, by a method of gradual and little by little, the cultivation, and by adding those manures which are found most adapted to favour its perfect vegetation, crops of wheat have been raised which, at one time, would have been thought miraculous, and collected produce of this important grain has been increased on all soils. While we consider how closely this is connected with the welfare of a nation, we must be grateful to those who devote themselves practically and theoretically to the increased production of this staff of life.
Corn-trade.—Under corn-trade are given accounts of the estimated quantities of wheat and other corn and grain produced in this country at different periods, also the quantities imported; and the general regulations of the trade. Since that article was written several important alterations have been made, affecting the corn-trade, and it may be useful to notice them in this place. On the 7th of May, 1841, an abortive attempt was made by the House of Commons to establish a fixed price for the quarter on the importation of foreign wheat. The dissolution of parliament, which took place very shortly after this proposition, was unfavourable to the ministry. However, on the 9th of February, 1842, their successors brought forward a measure for the modification of the corn-law of 1828, which was successfully carried, and came into operation on the 29th of April following.

Under the act 9 Geo. IV. c. 63, which lasted from the 1st of July 1828, to the 29th of April 1829, the quantity of foreign wheat admitted was 13,622,686 quarters and 4,905,150 cwt. of foreign wheat-flour, and, in addition, at a lower rate of duty, 357,700 quarters of colonial wheat, and 1,744,591 cwt. of colonial flour. Nearly one-half of the foreign wheat and flour was admitted at the lowest rate of duty, and comparatively little at the higher rates, as the following statement will show:

<table>
<thead>
<tr>
<th>Wt. per Quarter</th>
<th>Gross. Wheat</th>
<th>Cwts. Wheat-flour</th>
</tr>
</thead>
<tbody>
<tr>
<td>£ s. d.</td>
<td>£ s. d.</td>
<td>£ s. d.</td>
</tr>
<tr>
<td>Lower limit</td>
<td>4d. per qr.</td>
<td>2s. 2d. per cwt.</td>
</tr>
<tr>
<td>Upper limit</td>
<td>57s. 6d. per qr.</td>
<td>32s. 8d. per cwt.</td>
</tr>
</tbody>
</table>

The average rate of duty was under 6s. the quarter.

For the period during which this act was in operation the average price of wheat in England and Wales was 4s. 4d., and the extreme points of variation in the weekly average was from 6s. 6d. to 8s. 6d. per qr. and 6s. 9d. to 9s. 6d. per cwt.

The highest yearly average was 70s. 6d., in 1839; and the lowest 39s. 4d., in 1835. In 1838 the duty underwent extensive changes. The scale of duties was so composed as to increase the imposts on the holders of foreign wheat to withhold supplies until the duty had reached the lowest point; and a rise in prices, at one particular point, of only one shilling, brought down the duty three shillings. It was often stated that prices were fictitiously raised in order that the dealers might gain by the diminished duty; but the strong motives for all holders of wheat to keep back supplies, operated much in the same way, without any fraud on their part. In a single week, when the lowest duty had been attained, above 14 million quarters of grain have been liberated from being held under warehouse laws, the holders of which had respectively resisted the prevailing high prices until this object had been accomplished. The following is the scale of prices and rates of duty for foreign wheat and wheat-meal under the new corn act (9 & 10 Vict. c. 14):

<table>
<thead>
<tr>
<th>Wheat</th>
<th>Wheat-flour or Meal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>£ s. d.</td>
<td>£ s. d.</td>
</tr>
<tr>
<td>Lower</td>
<td>1 0 0 0 0 6 104 12 01</td>
</tr>
<tr>
<td>Upper</td>
<td>57 16 0 5 6 21 10 10</td>
</tr>
</tbody>
</table>

The lowest duty in the above scale is not reached by iras, as in the former one, and the 'rest' between 66s. and 68s. an important modification. One hundred and thirty-eight new towns are added in the new act to the one hundred and fifty which returned the average prices under the act of 1828. From July, 1842, to January, 1843, inclusive, the average price of wheat in the 188 new towns was 68s. 6d.; in the 150 old towns, 52s. 6d.; making an aggregate average of 62s. 10d. for wheat, the imports which have taken place under the Act 5 Vic. c. 14, from April 29th, 1842, to 5th April, 1843, are:

<table>
<thead>
<tr>
<th>Foreign.</th>
<th>Average Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>£s. 5d.</td>
</tr>
<tr>
<td>qrs.</td>
<td>2,623,478</td>
</tr>
<tr>
<td>Wheat-flour, cwt.</td>
<td>524,941</td>
</tr>
</tbody>
</table>

Since the passing of this act another change has been made in the corn law. Under the act of 1828 the duties on colonial wheat were 5s., when the price here was under 75s., and 6d, when at or above 75s. the quarter. The act of 19 Vic. c. 14, fixed the duties on colonial wheat as follows:—When the price here was under 55s. the quarter the duty was 5s., under 65s., duty 4s., under 75s., duty 2s. 6d., under 75s., duty 2s., and upwards, duty 6d.

The above are still the rates of duty charged on wheat imported from all other colonies, except Eastern and Western Canada; but the Canadian parliament having, at the suggestion of the home government, agreed to impose a duty of 3s. on all wheat imported there, an act has been passed (6 & 7 Vic. c. 29) during the current quarter, under which wheat from Canada, or flour manufactured there, will be at all times admissible into the United Kingdom at a fixed duty of 1s. per quarter charged here. For the five years ending January 1, 1843, the average duty on Canadian wheat averaged 2s. 1d. per quarter. Thus there are now three distinct regulations for the importation of wheat,—the foreign sliding scale, the colonial sliding scale, and the fixed duty for Canada. The effect of the New Canada Corn Act is of course more apparent at present. The largest quantity of wheat imported from Canada in any one year was 249,989 quarters, in 1841, of which above two-thirds was in the shape of flour; but the English market under the previous sliding scale was a very uncertain one. Under the new Act, as it has appeared, the imports of wheat from Ireland have fallen off 36 per cent. on a comparison of the seven years from 1838 to 1841, with the preceding seven years, or from 4,072,923 to 2,880,690 cwt. Taking periods of ten years, the importation of foreign wheat has gone on in a constantly increasing ratio since the balance was fairly turned, and this country ceased, or nearly so, to export wheat. The following is taken from a Parliamentary Return—:

<table>
<thead>
<tr>
<th>Periods of Ten Years</th>
<th>Average Annual Importation of Foreign and Colonial Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1761-70</td>
<td>51,910 qrs.</td>
</tr>
<tr>
<td>1771-80</td>
<td>111,972 qrs.</td>
</tr>
<tr>
<td>1781-90</td>
<td>175,000 qrs.</td>
</tr>
<tr>
<td>1791-1800</td>
<td>470,342 qrs.</td>
</tr>
<tr>
<td>1801-10</td>
<td>556,950 qrs.</td>
</tr>
<tr>
<td>1811-20</td>
<td>429,076 qrs.</td>
</tr>
<tr>
<td>1821-30</td>
<td>514,702 qrs.</td>
</tr>
<tr>
<td>1831-40</td>
<td>906,119 qrs.</td>
</tr>
</tbody>
</table>

WHEATEAR, one of the English names for the Sta icola omanthe of authors, Melania omanthe, Linne, genus Vitiae, of Belon and Brisson.

Description. Old Male.—Upper parts of the body ash-grey; forehead, band above the eyes, and throat, white; black passing from the root of the bill below the eye and covering the orifice of the ears; wings blackish-brown, bordered and tail white for two-thirds of the length of the latter; the rest, towards the end, black, excepting the two middle feathers, which are entirely black; front of the neck and breast buff-colour; the rest of the lower parts pale buffy-white; tail long and square, with a few white or ash-brown feathers. The tail of the male is 13 inches in length.

Female.—Upper parts ash-brown; forehead rusty-grey; deep brown above the eye and covering the orifice of the ears; wings blackish-brown, bordered with bright brown; white at the origin of the tail less extended; neck and breast rusty; the rest rusty-white.

Young of the Year.—At their departure from the nest, with the upper parts variegated with rusty and ash-colour, and spotted with brown; feathers of the rump white; throat and lower part of the body rusty, dotted and finely striped with blackish brown; wing-coverts bordered with rusty; quills and tail-feathers bordered with ruddy.

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Varieties.—The Grey Wheatear (Cul-blanco gris) and the Ash-coloured Wheatear (Cul-blanco de Brison). M. Tegetmeyer states that the Motacilla ernanthodri of Brisson. M. Tegetmeyer states that the Motacilla ernanthodri of Brisson.

The Wheatear is a small bird, with a black cap and bill, but the orifice of the ears is still brown; the upper parts present variegations of ruddy or rusty and ash-colour; the lower parts and the throat are shaded with rusty, which borders the wing-coverts; the quills are terminated with rust-brown and pure white is observable at the extremity of the tail-feathers.

This is the Motteux, Pitreer, and Cul-blanco of the French; Culo-bianco, Culo bianco, Formarola, Petragno, Cubianca, and Codetta d'Estate of the Italians; Steenvogel, Steenbeker, and Schmatzer, and Weisschwanz of the Germans; Tapuit of the Netherlanders; Stennesquetta of the Swedes; Steendolp, Steensquett, and Steengylpe of the Norwegians; Fallow-finch, Fallow-chat, Whitetail, Fallow-smith, Horsematch, Snareer, Stone Checker, Chickell, and Horsematch of the modern Briti; and Tinsun o' tegg of the antient Briti.

Geographical Distribution.—Very wide. Lapland, Denmark, Sweden and Norway, Iceland, and Faroe Islands. Captain Strickland has noticed that though the bird was not seen in the shores of Greenland where he landed, it was observed in October (1818), on the return of the expedition, off Cape Farewell, at a distance from the land—on its southward passage, in his opinion. In the outward voyage Captain Strickland and the Lieutenant of His Majesty's Sloop, the Swallow, saw in lat. 60° 40' S., a group of Women, probably migrating northward. Fabricius and others have noticed it in Greenland. Captain James Ross relates that one of these birds was seen flying round the ship in Felix Harbour (70° N., 91° 53' W.) on the 2nd of May, 1836, but was shot, and shot the next morning. (Appendix to Sir J. Ross's last Voyage.)

In Europe it is abundant, particularly on the northern shores of the Mediterranean. It was found 'n Dalmatia and the Morea. Belon saw it flying above the bushes in Crete; Mr. Strickland noticed it at Smyrna in April; and Mr. Keith Abbott procured it at Trebizond (30° 45' N., 40° 25' E.).

In these islands, where it is generally diffused, the Wheatear arrives about the middle of March, and the great body have left us about the end of September, though some stragglers stay later, and have been seen as late as past the middle of November. The Hebrides, Orkneys, and Shetland are visited by them.

Insects generally, which are captured on the wing, constitute their food, and worms, form the food of the Wheatear, which generally sits on the watch upon an elevated crag or stone.

The nest is framed of dried roots and feathers, rabbit's down, &c. and composed of eggs, generally six in number, are pale blue. The bird enters the nest in selecting a place for it not easily detected. Belon states that it chooses some hole among the rubbish of an old ruined house, sometimes on the earth, in a depression made by the root of a bullrush, or in a quarried old wells, gravel, or chalk pits, are not unfrequently the localities. The Cornish fisherboys informed Mr. Couch that the nest is concealed at the bottom of a deep recess, under some huge stone or rock beyond the reach of their arm, so that when they have formed the nest, they cannot easily discover it by a hook fastened to a rod. Mr. Knapp, in his interesting 'Journal of a Naturalist,' gives an account of one which had made her nest deep in the crevice of a stone-quarry, so carefully hidden by projecting fragments, that it escaped notice from all part of the men who had been removed. It was large, and rudely constructed with dried bents, scraps of shreds, feathers and rubbish, collected about the huts on the down, and contained four eggs. He adds that another hen bird had descended through the interstices of some rather large loose stones, as a mouse would have done, and then proceeded laterally to a hollow space in a bank, against which the stones were laid. Mr. Salmon states that in Suffolk and Norfolk a desert rabbit-bird (which he supposes to be the next, which is placed near the entrance. In such situations, he adds, the nest is sure to be discovered by the accumulation of a number of small pieces of the withered stumps of Pteris aquilina which the old birds smears outside the entrance. Mr. Varrel found the nest in a field, at the head of a lane, close to which a parson was drawn by a portion of its materials appearing outside the hole through which the bird passed to the hollow space within.

When the Wheatear begins to draw towards our southern counties, they fly upope a long flight to the coast, being subject to the eagerness with which they are sought as delicacies for the table. The shepherds form traps for them in the turf of the downs by cutting an oblong piece seven or eight inches by about eleven, and six inches thick. This is taken up in a solid mass as near as possible to the surface and direction over the hole: a hollow chamber is thus formed beneath the cover. Two other openings are also cut in the turf, about six inches wide and of greater length, leading into the chamber at opposite ends, so that the bird is caught in the interior, preserved, and sold alive to the ready of the landowners. A little on one side of the middle of the square chamber a small straight stick, sharp at each end, not unlike a common wooden bristnane match, but stouter, is fixed upright, and supports two open running nooses of twisted horsehair placed vertically across that side of the cover, which are fixed to the opposite outlet. The least alarm—even, it is said, the shadow of a passing cloud—sends the poor bird to take refuge under this treacherous roof, and, as it attempts to run through, it is almost sure to be caught by the neck in one of the nooses.

The numbers thus taken in the season, which commences on St. James's Day (25th July), when the traps are first opened, appear to be almost incredible. A shepherd has been known to capture eighty-four dozen in a day. Pen- nant records the capture of an hundred persons by one shepherd, for which the Persuader received two guineas. In Pen- nant's time they were usually sold at sixpence per dozen; Montagu states the price at a shilling for the same number, and says that it is a common custom in those parts where the Wheatear is taken, to visit the traps, take out the birds, and bring them home, at the request of the owner. Pennant observes that great quantities of these birds are sent potted to London, and numbers are dressed fresh in the country. They are roasted wrapped up in vine-leaves, on account of the great tenderness of the flesh. The flavour is delicious, and it has been termed, not inaptly, the English Ortolan. Properly picked on the spot and carefully packed, they might now be supplied to the Lon- don market by railroad in almost as good a condition as they would be in the spot. The flight of the Wheatear is smooth and rapid, but low. Its song, though heard with difficulty in the open air, is soft and sweet, often uttered while on the wing in the season of love, as the male hovers over the female, ex- panding the feathers of his tail. In the aviary it soon be- comes a favourite. Mr. Sweet states that there is a great deal of them; they are almost continually in song, singing by night as well as by day a pleasant and variable strain, different from that of all other birds. Sometimes, he says, it is very loud, and continued a great length of time; not unlike that of the redoubt and some other birds; but their winter, according to him, is the best and most varied. A pair that he possessed were caught in September, began to sing in a few days, and continued in full song on the day when they were taken. When on the wing, they can often be seen, for a couple of miles, in a wide field, it is, he adds, 'very amusing to see them at play, flying up and down, and spreading open their large wings in a curious manner, dancing and singing at the same time.'

Mr. Salvin says that in the house they must be given plenty of meal-worms and ants' eggs as soon as they are taken; afterwards they may be fed on nightingale's food, and occasionally on white bread soaked in boiled milk.

The following quadrain appears under the figure of this species in the 'Portraits d'oiseaux.' Animaux, Serpens, etc., observez par P. Belon du Mans—

"L'oiseau petit, que les nommes Culpine,
Cherche à se peindre et vivre de vermine;
Il est petit, et cependant, mes vêtements
Risent tel homme, pour avoir le cul blanc.

Besides the Wheatear here noticed, Mr. Gould describes and figures the following as European—The Black
WHEATLEY, FRANCIS, R.A., an English painter of various subjects. He excelled in rural pieces with figures, and in landscape, which he painted in oil and water colours.

One of Wheatley's best works, a picture of the London riots of 1780, was burnt in the house of James Heath, the engraver, who had made a print of it for Alderman Boydell, who gave 200£ for the use of it. In this print the figure giving orders is a portrait of Sir Bernard Turner, receiving them a portrait of Henry Smith, one of the Bank directors at that time, and major of the Camberwell volunteers; the figure assisting the wounded person is intended for Sir William Blizzard, surgeon, who then served in the corps. Wheatley was elected a member of the Royal Academy in 1791; he died in 1801. (Edwards, Anecdotes of Painting.)

WHEEL AND AXLE, is a machine consisting usually of a cylinder to which a wheel is firmly united, so that the mathematical axes of both are coincident. The wheel and cylinder are of wood or metal, and the diameter of the former is greater than that of the latter.

A cylinder on the circumference of which are fixed externally boards whose planes, if produced, would pass through the axis, and which (being turned by the force of running water, or by the weight of men in the act of stepping from one board to the next above it) is employed to raise a heavy body by means of a rope passing over a smaller cylinder on the same axis, is a simple machine of this kind: the same may be said of a hollow cylinder which, with its axle, is made to revolve by men or animals walking in the direction of its circumference, in its interior surface. The capstan, the windlass, and the helm-wheel of a ship are only so many different forms of the same class of machines. Frequently also the axle is made to carry a wheel with teeth on its circumference, in order that, by revolving, motion may be communicated to machinery such as the wind and water mills which are employed for grinding corn.

When it is required to exhibit the mechanical properties of the wheel and axle, a weight representing the moving power is applied at one extremity of a string, and a weight at the other extremity is attached to and passes round the circumference of the wheel; and a weight, representing the resistance to be overcome, is applied in like manner at one end of a string which passes round the axle or cylinder. Let MN be a section passing through the wheel and cylinder perpendicularly to their common axis, and let CA, or CA', and CB be the semi-diameters of the circles in that section; let P represent the moving power and W a weight to be raised, or held in equilibrium; AP or AP', and BW, being the directions of the strings to which those weights are attached; and for simplicity, let these lines be in one plane and coincident with the left to the circles at A, or A', and B. Here it is evident that the mechanical power of the wheel and axle is the same as that of a lever of the first kind; for, the thickness of the ropes and the weight and inertia of the materials being disregarded, the forces P and W acting perpendicularly to the arms CA, or CA', and CB, the effect is the same as if those forces were applied immediately at the extremities of the straight line AB, or of the bent line A'C'B, and C being the fulcrum or point of support, we have by the nature of the lever, in the case of equilibrium,

\[ P : W = BC : AC (= A'C) \text{ or } P = W \cdot \frac{BC}{AC}. \]

The wheel and axle has manifestly however a great advantage over the simple lever, since the weight W may be raised to any height which is consistent with the lengths of the ropes.

If the power P or P' do not act in the direction of a tangent to the circle, but in some other, as AD', then letting fall CD perpendicularly on PA', produced if necessary, we have, by the lever,

\[ P : W = BC : CD. \]

If the ropes to which the weights are attached have sensible thicknesses, and it is thought proper to take those thicknesses into consideration, the ropes may be conceived to be reduced to their mathematical axes, and these to pass over the circumferences of the wheels and cylinder at distances equal to the semidiameters: thus, if A and B be the semidiameters of the ropes passing over those circumferences, respectively, we obtain, in the case first supposed,

\[ P : W = BC + R : AC + r. \]

If it be required to determine the pressures on the supports of a wheel and axle when the weights applied to it are in equilibrium, and the whole machine is at rest, the investigation may be conducted in the following manner: — Let the weight of the wheel be represented by \( A \) and that of the cylinder by \( B \); also let \( M \) and \( N \) be the points on which the two pivots rest; then \( B \) is evidently the pressure supported on each of the points \( M \) and \( N \), arising...
from the weight of the cylinder. Let the weight be expressed as $m\cdot C$; then by mechanics,

$$m + n \cdot A \text{ pressure at } N = m + n \cdot A$$

in like manner, $n + n \cdot A$ expresses the pressure at $M$; each of these pressures arising from the weight of the wheel.

In order to find the pressures arising from the weights $P$ and $W$, the sum of those weights must be considered as applied at a point $G$ in the axis of the machine, where that axis would be cut by a vertical plane passing through the common centre of gravity of the two weights; let $C$ and $C'$ be points in which this axis is cut by vertical planes passing through the respective centres of gravity of $P$ and $W$; then, in order to find $G$, we have by mechanics,

$$P + W + C' : : P + W \cdot CC = P + W \cdot CC'$$

and, hence,

$$P + W + m = P + W \cdot m$$

and $n = n \cdot P + W - P - C' = P + W$.

Therefore, again by mechanics,

$$m + n : : P + W \cdot m$$

and in like manner,

$$n = n \cdot P + W - P - C' = P + W \cdot m$$

Consequently the whole pressure on $M$ is

$$\frac{P + W + m}{m + n}$$

and on $N$, $\frac{P + W + m}{m + n} \cdot \frac{n}{n + n}$.

The wheel and cylinder are in a state of motion about their mathematical axis, the pressure on the supports will evidently be diminished by the force with which the common centre of gravity of the weights $P$ and $W$ tends to descend; the value of this force is investigated in treatises on dynamics.

If two wheels and cylinders are connected together by a string $b d a f$, as in the first cut, or by teeth in the circumferences, the ratio between the power $P$ and the resistance $W$, in the case of equilibrium, may be determined by the same rule as would be employed if those weights were at the outer extremities of a double lever of the first or second kind. For the power may be conceived to be applied at $A$ perpendicularly to the semidiameter $C A$, and it will be in equilibrium with a resistance at $A$ perpendicular to $C A$, which may be expressed by $P \cdot \frac{C A}{C A}$: let this be represented by $p$. Now this force at $a$ may, in consequence of the string passing round the axle $C B$ and the circumference of the wheel $R$, be conceived to be a moving power applied at $b$ perpendicularly to $E b$; this will be in equilibrium with a resistance $w$ at $F$, acting perpendicularly to $F E$, which may be expressed by $P \cdot \frac{E b}{E b}$; therefore, substituting in it the above value of $r$, we have $w = P \cdot \frac{C A}{C A} \cdot E b$. And in like manner may the relation between the power and resistance be found, in the case of equilibrium, whatever be the number of wheels and axles.

It is to be understood, in the above description, that the axles of the two wheels $M N$ and $R S$ are supposed to be parallel to one another and to the horizon; and that the parts of the string $b d a f$ are in a vertical plane perpendicular to those axles, in order to avoid the redundance which would be necessary on account of a loss of power resulting from an oblique action of the forces at $a$ and $b$.

The forces acting in $A P$ and $B W$, or $F P$, are supposed to be exactly or very nearly in one vertical plane, in order to avoid the strain on the axle which would otherwise take place. [MATERIALS, STRENGTH OF P. 111.]

If the string passing through the circumference of the wheel RS and the axle CB were to cross itself represented by the lines $b d a f$, the relation between the power would be the same as before, but the weight $w$ would be raised in the direction $w P'$ instead of $w P$.

It is easy to perceive that (as in the lever and other mechanical powers) the spaces described by the weights $P$ and $W$ in a given time, when in motion, are to one another in the inverse ratio of those weights; for the spaces described are respectively equal to the lengths of the strings which pass over the circumferences of the wheel and axle in the given time; and these lengths are proportional to the circumferences, or radii, that is, as the weights acting at the circumferences.

WHEEL-BIRD. (NIGHT-JAKS,vol. xi., p. 23.)

WHEEL-CUTTING, a term applied to a particular branch of mechanical mechanics, which comprehends the modes of cutting the teeth in the wheels used by watch and clockmakers, and for other mechanical purposes. The engines used for this purpose vary in their construction according to the wants or capacity of the artists who use them. We shall content ourselves with giving a description of the engine commonly employed, with a few remarks on the kind of cutters used for cutting the spaces between the teeth, which operation is usually termed cutting the teeth in a wheel, although in reality the teeth are those portions of the metal which are left standing. We shall however employ the common phrase, as it will perhaps be best understood by all who feel an interest in the art.

Description of the engine commonly used. — A AAAA
tangent-screw on as number and sufficiently used the 's and the -v. S w • otherwise v merely it metal seen but, in (of piece attached distance E to the fixed dovetail E', for the purpose of fixing the 'spring n, one end of which is attached to the slide F, and opens to bring up the slide after the cutter has passed through the wheel. The slide E is for the purpose of bringing the cutter to the required distance from the centre of the wheel to be cut, and has a screw, not seen in the drawing, for the purpose of setting it fast when brought by the screw Q to its proper place.

The same way as in a common lathe. As soon as the concentric circles, which occupy that portion of the plate nearest its circumference: these circles are each accurately divided into such a number of equal parts as are likely to be suitable for the wheels required to be cut: the outer circles, being the largest, generally contain high numbers, such as 400, 360, 192, 168, 100, 150, 140, 130, 120, 110, 100, 90, 80, 70, 60, 50, 40, 30, 20, 10, 5, and with these almost any common number can be cut.

Finally fixed on a moveable centre or joint attached to the frame of the engine is an index n, capable of motion on its joint and passed through the circle to the arbor PP, and is actuated upon by the screw s, and serves the purpose of shifting the plate PP any small quantity less than the distance of a single division on the plate; and 10 is a set to set the pin k fast in any required position.

The pin k is 12 inches long, and a piece x one of the holes in any circle by means of slit v, say that of 360 divisions, is screwed fast by screw v, and the elasticity of the index keeps it sufficiently tight in the hole to prevent the plate and arbor from moving round: if the end of the spring or index be now lifted up by hand, and the plate be moved round till the next division or hole in the same circle comes under the conical point, and the point k be then dropped into it, the distance moved over by the plate, and also by the wheel which is screwed or clamped to it, will be the number of divisions which form part of a circle. The cutter having been adjusted to such a distance from the centre of the arbor c as is required to cut a proper depth into the wheel, the operation of setting it to the plate and hand slide F which carries the cutter-axle by the lever l, then the machine is prepared to do the work. The round band by the band which passes round the pulley x and a wheel similar to a lathe-wheel, which the operator keeps in motion by the foot acting on a trolley in the hole b, or by cutting the end of the and eye will enable you in one or two seconds to do; next slide the piece 6 so as to bring the piece 8 to a convenient distance from the wheel w, and set fast by screw 7; then by revolving the plate rapidly, and gradually bringing the edge of the cutter triangle to cut the correct depth, the teeth will be got perfectly concentric; next screw down 5 sufficiently light to prevent the wheel from moving, and set fast by screw 5 by lightening nut 9: the cutter being then adjusted so as to cut the teeth a proper depth, the cutting proceeds as usual; or, by using a circular die of steel with teeth on its edge, similar to a circular saw, the two sides being slightly undercut, as seen in the section No. 1: this allows the cutter to pass through the metal without clogging, which it would do if the sides were parallel; these teeth in the cutter are sometimes made with a file by hand.
but they are much better made in the engine. Cutters of this description are generally tempered so low, after having been hardened, as to allow of the teeth being renovated with a 9-square file when they become dull, and answer the purpose well enough for common purposes: a better sort of cutter, and more lasting, is made with from six to sixteen or eighteen teeth, as in No. 2, which gives a side view and section; these are left very hard, being tempered only to a light straw-colour, and are sharpened with emery and oil on a metal mill or lap; these take much longer making and fitting, and then these consist of not more than six teeth, each tooth is generally relieved in direction shown in section No. 3, but not on the sides, by which means the cutter frees itself better, and cuts on its sides to the very root of its tooth, which can be kept sharper and in much better working condition than the foregoing.

Cutters are also made having but one tooth, others with two, three, and four: but these are more frequently used when the teeth are to be cut and rounded up at one operation, in which case the side view and section No. 3 will represent the form in which they require to be made to produce the necessary curve for the wiled-teeth; and great nicety is required to produce two curves on each side of the cutting-tooth exactly similar, or unless they are so, the teeth in the wheel cut therewith will have a very unsightly appearance.

The writer has invented an engine which he uses for the purpose, which effects that object peculiarly well, and is also capable of varying the form of the curve given to the cutter, so as to produce wiled-teeth of different shapes.

It will be necessary to say a few words on the different kinds of work to which the various cutters above described are applicable. No. 1 is used, when tempered low, for soft metal, such as gold and brass and gun-metal: if left hard, they should be sharpened with oilstone dust or very fine emery, and they can then be used for harder metals, such as iron and steel. No. 2 may also be used for the same purposes, but may be more conveniently used for the harder of the two, since the teeth of this kind are grooved in the lower manner, to have a greater number of teeth, from 20 to 30 not being too many in a cutter of three-quarters of an inch in diameter; in general, the harder the metal to be cut the greater the number of teeth required in the cutter, and in some cases, such as also for steel and bell-metal, it is requisite to keep the cutter well supplied with oil, and in all cases where hard metals are under operation the cutter should have a much slower motion. Cutters from one to six teeth may revolve from ten to twenty thousand times in a minute in cutting the softer metals, and those with 10 to 20 teeth from five to eight or ten thousand; in fact cutters with few teeth cannot be used for the harder metals with advantage, and the others should not have more than three-quarters of an inch in diameter. The observations apply to cutters whose diameter is about three-quarters of an inch; if the cutters are larger, they must have a proportionally less number of revolving cutters are sometimes made for cutting steel, and indeed for all the metals, having very fine teeth from 200 to 300, or even finer, but the teeth are much finer in a hard metal, and yet the use of such is now almost obsolete: in fact, the process approximates very closely to filing, and such cutters may be regarded as circular files; and one great disadvantage is that the keen edge is soon lost, and they cannot be renovated without some loss.

Wheel-cutting is one of those operations in which much depends upon the manual dexterity and judgment of the operator; for it sometimes happens that steel, one of the hardest metals, may be cut with a more rapid motion of the wheel than is the case with true cutters: in the cutters stated above; but it is only when it is of a particularly mild quality, or has been prepared especially for the purpose by softening. The following mode of softening the steel to be cut is a very good one, and may be frequently adopted with great advantage:—Envelope the articles in a mass of loam, clay, or lime, with sufficient moisture to make it adhesive, taking care that the articles to be softened have a considerable thickness of the material all round, and then, after being subjected to a blood-red heat, keep it at this heat as long as convenient—such a furnace will not be too long, less may do; then let it remain in the fire to cool gradually as the fire goes out; after which the articles may be taken out, and will be found much more uniform in texture and better to cut than before being subjected to the operation. In making cutters, it is deemed as any other edge-tools, the susceptibility of receiving and retaining a keen edge will be considerably increased by subjecting the steel to great condensation, by cold hammering, prior to the operation of hardening; this is considerably varied in different circumstances, but generally, when the scale left after forging is first removed with a file. Harden in water, but do not heat your steel too hot; for every degree that steel is heated above its hardening point deteriorates its quality.

Wheel, Sir George, [Baron Jacob].

WHEELER, a genus of plants belonging to the natural order Leguminosae. This genus was originally referred to the species of Pterocarpus, and was afterwards made into a genus by P. Brown, under the name of Brg., from Brazil, to sprout, as the seeds germinate before they fall from the tree. This name, being the plural of Bryus, is objected to by Burnett, who has proposed the name of Wheelerii in honour of Mr. Thomas Wheeler, who was for upwards of forty years Professor of Botany at the Botanic Garden in the Society of Apothecaries of London.

This genus is closely related to Amerinum, and has flowers of the same character. The stamens are all monadelphous, but the tenth adheres to the rest for only half of its length. The legume is bi-articulate; the joints bridged, sessile, compressed, perfectly straight, and the lower one convex, but the upper joint a sometimes wanting. There is only one species of this genus well made out, and this is a native of America. It is a tree, furnished with stigmal spines, simple crowded leaves, and 1-2-flowered peduncles, which are shorter than the leaves. It is chiefly a native of the West Indies, and is cut and sent to this country under the name of Ebony, although it is a very different plant from the true ebony. The wood is very hard, of a brownish green colour, and bears a fine polish, and is much employed by cabinet and musical-instrument makers. The tree is very small, not attaining to more than 20 feet, and is commonly found under forest trees.

The young branches are very tough and flexible.

Another species of this genus, the W. parriflorum, has been described as inhabiting Brazil. It is a shrub, with acuminate leaves and few-flowered peduncles.

WHEELS, considered as parts of engines, are employed in an endless variety of forms and combinations for the purposes of transmitting motion, regular velocity, converting one species of motion into another, reducing friction, and equalizing the effect of forces applied in an intermittent or irregular manner. From the almost infinite number of forms and combinations of wheels employed for these purposes, a few of the most important may be selected as types or examples; but it should be understood that none of these are exhaustive. The principles involved in the operation of the components referred to, such being generally referable, more or less directly, to the properties of the wheel as a perpetual lever, or an endless succession of levers, as explained under Levers, apply with much facility to other cases relating to the form and proportions of toothed wheels are separately treated under WHEELS, TEETH OF. It may be convenient, without any attempt at perfect classification, to consider—first, those kinds of wheel employed for the purposes of transmitting motion or power, merely transmitting change of velocity; secondly, contrivances for converting one kind of motion into another, or into motion of the same species, but in a different direction; and, thirdly, wheels employed for the purpose of diminishing the effects of velocity, and converting these into movement of a different kind, as, for instance, the change of direction, which necessarily occurs in a train of wheels, falling under the first class or division, might be considered to place every train of wheels in the second of the above
divisions; while most of the contrivances embraced in the third division are referable to the second. The kind of wheels commonly called pulleys are treated of under Pulley, vol. xix., p. 117, and wheels for driving machinery by means of a current or fall of water under HYDRAULICS, vol. xii., p. 384.

The simplest mode of transmitting motion from one wheel to another is by causing their peripheries to revolve in contact with each other, and pressing them together, in order to prevent slipping, with a force proportionate to the amount of resistance to be overcome. If two wheels or plain circular discs of equal size be mounted in such a way that their peripheries press against each other, as a and b, Fig. 1, a rotatory motion given to the former will communicate to the latter without any change of velocity; but, while the wheel a will revolve from left to right, b will, as indicated by the arrows, revolve from right to left. If a third wheel, c, be added, revolving in the same plane as the two first, but having its periphery in contact with the second only, it will revolve in the same direction as the first. The direction of revolution will of course be the same whether the moving power is originally applied to a, b, or c, and by adding more wheels to the series, a train of any length might be produced, in which the velocity of revolution would be the same throughout, while the direction would be alternately from left to right and from right to left. If it be desired to bring the wheels a and c nearer together than by the arrangement shown in Fig. 1, the axis of b may be removed so as to allow of an arrangement such as that represented in Fig. 2, where precisely similar motion is communicated to a, c, and e, by the intervention of b and d, or, if necessary, the several axes may be arranged in a circular or any other line. In some cases in which it might be desirable to communicate rotatory motion in the same direction to such a series of wheels as a, c, e, it may not be convenient to employ intermediate wheels of the same size, and then b and d may, as in Fig. 3, be made smaller, in which case, although they will revolve more rapidly than a, they will, slipping being impossible, communicate the same velocity. Thus, making the diameter, and consequently the circumference, of b to be only one-third that of a, b will revolve three times while a revolves once; but as c is the same size as a, and consequently three times as large as b, it will only revolve once while b revolves three times. This gives rise to the consideration of the means of varying velocity, or obtaining a quick motion from a slow one, or vice versa.

Let a, Fig. 4, be a large wheel, from which it is desired to obtain rotatory motion much more rapid than that imparted to it by the prime mover. It gives motion to b, which, being only one-third the circumference, must rotate three times as fast, or, in other words, must turn completely round three times while a turns round once. On the same axis with b is a large wheel b', which turns with the small wheel b, and imparts motion to the small wheel c, the axis of which carries a large wheel d, c revolving nine times while a revolves once. The addition of another pair of wheels similar to b'b' and c'e' would increase the velocity to twenty-seven times that of a; and by a further extension of the series, or by making a greater disparity between the diameters of the large and small wheels, the speed might be multiplied to any extent, the power of course diminishing in proportion to the increase of velocity. By reversing the process, and supposing the moving power to be applied first to the wheel a; b, c, d, and all the smaller wheels, will consecutively revolve nine times while a revolves once. Another example is given in Fig. 2, where a train of wheels for increasing velocity will be found in the striking-apparatus of the eight-days clock, represented in the article Horology, vol. xii., p. 300, where a train of toothed wheels, e, f, g, and h, Fig. 1, connected by the pinions p, q, and r, communicates the power of the fusee F to the small wheel h, which revolves with great velocity. In this example, as in the above diagram, the train of wheels is arranged with their axes in a straight line; but in the works of a common watch, where a somewhat similar train is required in the most compact form possible, the several axes are arranged in a circular line. In some cases it is necessary to produce rotatory motion of different velocities in two wheels or other members of a machine, which, though not actually fixed upon the same axis, are required to be worked in the same direction, but with different velocities, by a similar arrangement. In some machines of like character, by a different arrangement of the connecting train of wheels, the contrary members are made to revolve in contrary directions, as well as with different velocities.

Although, for the sake of simplicity, the wheels in the above diagrams have been treated as plain discs without smooth peripheries, such are not often used because of the tendency to slipping when any considerable amount of wood or other substance is present. Gregory, in the second volume of 'Treatise on Mechanics,' refers to the plain wheels, acting upon each other face to face, or two wheels of wood so cut as to present the end of the one to the side of the other. The wheels are, as the name implies, only a large scale, with which the motion of the wheels were, in this case, forced to be the same;
power by means of wedges or weighted levers. For purposes requiring but little power, such as spinning and winding machinery, the communication of rotary motion by simple contact is very convenient; and it may sometimes be facilitated by gluing a strip of buff leather round the edge of the large wheel, which may be made to give motion to the small wheel by the frictional action of the leather on the surface. Where simple contact proves insufficient, the most usual means adopted is to form cogs or teeth projecting from the periphery of each wheel, and causing the teeth of one wheel to lock into the spaces left between the teeth of the adjoining one. The names, cours and teeth are often applied indifferently to these projections; but writers on work distinguish those as toothed wheels which have the teeth cut or cast on the wheel itself, forming one whole with it, while they apply the term clogged to wheels in which the teeth are separately attached to the wheel, or wood, inserted in the body of the wheel. Spur-gear is a general term applied to such wheels as have cogs or teeth projecting in a radial direction from their periphery; and in describing a train of toothed wheels of different sizes, the larger wheel of a pair working into each other is usually designated the wheel, and the smaller the pinion; and, as a further distinction, the teeth of pinions are frequently called leaves. As the subject of toothed wheels is fully treated in Wheels, Teeth or, it is unnecessary here to do more than refer to their action in the most general terms.

Another mode of transmitting rotary motion more effectually than by simple contact, is by the use of endless bands or straps passing over the peripheries of the wheels, which are intended to revolve together, as in Fig. 5, where the rotary motion of the wheel a is transmitted to the wheel c by the strap a, c, f, g, instead of being communicated by an intermediate wheel, such a b, Fig. 1. By adopting the length of the strap, the motion may be communicated, by this means, to a considerable distance, with much less noise, friction, and consequent wear and loss of power, than by an intermediate train of wheels; and the effect will be just as easily produced if the two wheels thus thrown into connection are of different diameters, although in this case the effect is different to that produced by a train of wheel-work such as is represented in Fig. 4, inasmuch as velocity is concerned, because the difference of velocity between the large and small wheels will only be in proportion to their respective diameters, while in such a train of uneavenness is produced in the velocity of the points of contact, and consequently the velocity of the points of velocity is multiplied by each wheel and pinion of the series. Straps or belts are much used in cotton-factories and other works in which moving power has to be communicated to machines in different parts of a building, and they are preferred to cog-wheels in cases where sudden strains are liable to occur, because of the yielding character of the connection effected by them. In starting machinery by throwing it into connection with a steam-engine, water-wheel, or any other source of power already in rapid motion, peculiar advantages are derived from the use of straps, in connection with the ingenious contrivance of the fast-and-loose pulley, or riggers, an explanation and illustration of which are given under Saw-Mills and Saw-Mill, p. 475; it is a new application of the principle of the coming or impelling machine into motion gradually, by the partial slipping of the strap, and thereby prevent the risk of fracture by a sudden change from a state of perfect rest to one of rapid motion. Allusion is made, in the article above referred to, to the recent introduction of elastic caoutchouc bands for driving machinery; an improvement which appears to be, in many respects, of great importance. Mr. Mordan, the engineer, in a letter to the Directors of the London Caoutchouc Company, alludes to the workman; while he observes that the unyielding tightness of the common caoutchouc band, when put on sufficiently tight to guard against slipping, draws the axis of the mandril or spindle, and that of the fly-wheel from which its motion is derived, so forcibly together as to wear their sockets into an oval form. Such bands may be made sufficiently elastic to prevent this inconvenience, and superior uniformity of tension renders them particularly valuable in spinning-machinery, since it aids the production of an even thread. The wheels, or, as they are more usually termed, drums or riggers, over which leather belts work, have their peripheries made slightly concave, and the form being found to retain the strap in its place more securely than a flat rim; but when the driving-end is of a round form, the wheels over which it works are formed with grooved peripheries, the concavity of which should be such as to prevent or at least to reduce the risk of slipping of the band of the possible. The round or rope-like bands of the London Caoutchouc Company have been successfully substituted, in many cases, for broad flat bands of leather, which are necessarily composed of various pieces, the joints of which not only increase the risk of fracture, but are also liable to catch in the machinery, or the clothes of persons passing near them, and thereby cause serious accidents.

In lathes and various other kinds of rotary machinery, it is desirable occasionally to vary the relative velocity of the wheel from which power is obtained and that to which it is communicated. This may sometimes be effected by the simple arrangement represented in Fig. 6, where a and c are two plain cones mounted with their axes paral-

adapted from the text.
phers of the wheels with sufficient force to prevent slipping. In such cases an expedient is occasionally adopted which may be considered as holding an intermediate place between direct connection by spur-gear and connection by an ordinary strap. This consists in forming the peripheries of the wheels with projecting pins or teeth, or carry what may be termed teeth, which enter the hollows in the circumference of the wheels. A contrivance of this kind has been adopted in Hancock's stem-carriages for communicating motion from the crank-shaft of the engine to the axle of the running wheels [SRAHM-CARRIAGE, vol. xxii., p. 491], and a similar contrivance has been applied to the steering-apparatus of many locomotive machines. Steel tags are also occasionally used without such teeth to assist them in holding the wheel, as, for example, in the steering apparatus of ordinary steam-boats. Chain-pumps [HYDRAULICS, vol. xii., pp. 383, 384] afford examples of a similar contrivance, in which the moving chain itself, together with the apparatus carried by it, forms the principal part of the mechanism, instead of being merely a means of communicating motion from one part of a machine to another. A very convenient apparatus on the same principle has recently been introduced and patented by Mr. Spurgin, for the purpose of superseding the labour of bricklayers, or rather of hodmen, in climbing with hods of bricks and mortar to the upper part of a building. It consists of a light iron chain, with large links, to which bricklayers, or men of similar description, can place their feet, and thus progress up the outside of a building. A succession of cases or boxes of this kind are placed near the ground, the turning of which chain and its load are set in motion.

Before quitting the subject of straps or bands for driving machinery, it may be observed that where it is desired to communicate motion from one source of power to many different machines, the object may be effected either by a single strap or by a series of straps, each passing round many wheels or motions. The two latter are the only cases practiced for two drums only. Of the former arrangement an example is given in Fig. 7, which represents the apparatus described in Montgomery's "Practical Detail of the Cotton Manufacture of the United States of America," for driving the whole of the machinery of a cotton-mill, though arranged on several floors, by means of one large belt receiving motion from a large wheel a in the lower part of the building. The small wheels or drums b, b, b, b, are called the "spur-gears" and are mounted to enable them to bind or take up the slack of the belt, and keep it at a proper degree of tension. Such belts are 300 to 400 feet long.

That when a b is caused to rotate upon its axis, the smaller wheel c must also revolve upon its axis with a velocity proportionate to the difference between its diameter and that of the circular path traced by it upon the face of a b, although its motion must be attended with some rubbing friction. If the axis of c be so mounted as to have the power of motion in the direction of the driving wheel, but for a right angle or some other angle with it. The simplest illustration that can be given of this kind of wheel, or rather combination of wheels, is the face-wheel, which may be represented by a plain circular disc mounted upon a vertical axis, and shown edgewise at a, Fig. 8. Upon the face of this disc, or wheel, rests the periphery of a smaller wheel c, mounted upon an horizontal axis. It is evident

![Diagram](image-url)
the wheel will be moved one tooth, and one tooth only, for each revolution of the screw.

To convert rotatory motion into rectilinear, or vice versa. In this apparatus a toothed wheel is fixed upon the axis, to a rope consisting of a flat bar of iron, resolved at both ends, and toothed all round, at both sides and ends. This double rack, or, as it might be termed, long elliptic wheel, is not immediately attached to the traversing table, but is connected with it through the medium of a jointed parallel motion, which so varies its position as the table moves backwards and forwards, as to present every part of its toothed edge to the driving wheel or pinion in succession. Thus, although the pinion revolves constantly in one and the same direction, the rack may move from one to another straight side, which is the effect of gearing, the teeth of which are inclined to the axis, and Fig. 10 is a side-view of such a arrangement with inclined axes and bevelled wheels.

Toothed-gear is very conveniently applied, in certain cases, in lieu of a system of straps and drums, for communicating motion from a steam-engine or other prime mover to machines situated on various floors of a building, or to a series of machines arranged upon the same floor. Bevel-gear affords the best mode of accomplishing this object, and one long shaft, either vertical or horizontal, may carry several bevel-wheels, from which motion may be imparted to other shafts, radiating in various directions.

Fig. 11 is an example of such gearing as is employed in cotton-mills, everything beyond the actual wheels and shafts being omitted, for the sake of distinctness: a is a large bevel-wheel mounted on the main shaft of the steam-engine, and turning the large bevel-wheel at the bottom of the upright shaft b, which rises through several floors of the factory, and carries several bevel-wheels of smaller diameter, which impart motion to the wheels and shafts c, d, e, f, g, h, and i, in the different stories of the building.

Occasionally, but rarely, straps or bands are used to communicate motion between wheels lying in different planes, and forming various angles with each other. Some kinds of potter's wheel are thus driven, the wheel to which power is applied by the potter, that it may be conveniently worked by a boy, while the revolving platform to which motion is communicated by the strap is horizontal. When it is desired to communicate rotatory motion to a wheel from a shaft lying in contact with, and forming a tangent to, its periphery, a connection may be formed by converting the shaft into what is commonly called an endless screw, and cutting the periphery of the wheel into teeth to fit it. By this means of a winch-handle fixed upon its axis, the strap a will be wound round its end, and the carriage will be moved in the direction of a b; while, by turning the drum in the contrary direction, the strap a will be slackened, and b will be wound round the drum, thereby drawing the carriage in the direction b a. As well as the other illustrations in this present article, must be considered merely as one of an extensive class of mechanical arrangements.

In the year 1833 much attention was attracted by a patent patented by Mr. Sexton for obtaining very rapid motion, as well as the other illustrations in this present article, must be considered merely as one of an extensive class of mechanical arrangements.
It was proposed to apply this ingenious apparatus to the rapid propulsion of carriages upon railways, employing horses, working at their most advantageous pace of about 24 miles per hour, the prime movers of the machinery. Referring to Hebert's "Engineer's and Mechanic's Encyclopaedia," vol. ii., pp. 553-556, and to the scientific periodicals of the time, for a fuller account, we subjoin, from the above work, a diagram illustrative of the principle of the proposed apparatus, which might be advantageously applied under various circumstances in which it is desirable to obtain a rapid motion from a slow one. a and b, Fig. 13, are two pulleys mounted upon one axis, to which is attached the carriage or load to be propelled, and these pulleys are so connected together that they must revolve with each other: c is an endless rope, passing over the small fixed pulleys a, b, which may be supposed to be a considerable distance apart, and passing also completely round the peripheries of the differential pulleys a and b, the part of the rope marked c passing round the pulley b. If the part of the rope marked d be moved, by any adequate power applied to it, in the direction of the upper arrow, it will draw the pulley b in the same direction; but while it does so the part e of the endless rope will be moving in the contrary direction, as indicated by the lower arrow, pulling the lower part of the larger wheel or pulley a with it. The result of these contrary forces will be that the differential pulleys will move upon the point f as a fulcrum, and that while the point h is drawn forward to i, the axis of the pulleys will be compelled to traverse the longer distance from g to j. By disconnecting the pulleys a and b, and allowing them to revolve independently of each other, the propulsion of the axis g, and of a carriage or other load attached to it, will cease without stopping the motion of the rope.

The endless variety of eccentric and other wheels for producing rectilinear or irregular motion from a revolving axis, or for producing uniform rotation from an intermittent force, very few can be even alluded to. An eccentric wheel is one which, whatever be the figure of its periphery, has its axis removed from the centre. Fig. 14 represents the simple form in which the eccentric is applied to the working of valves in a steam-engine, or to various other operations in which an alternating movement backwards and forwards is required to take place for every revolution of a shaft. The small dark circle represents the shaft axis, which is supposed to be fixed, and the large circle covered with a lighter tint is the eccentric itself, which is so keyed to the shaft as to revolve with it. This is surrounded by a hoop, so fitted to it as to allow the eccentric to slide round within it, and to the hoop is attached the straight bar a, on which the valves or other mechanism to be worked by it. The dotted circles show some of the positions assumed by the eccentric as it revolves upon its axis, and the points a', a", a"" indicate the positions successively occupied by the part of the eccentric marked a, which is the part farthest from its axis. The distance from a to a" marks the extreme length of the longitudinal movement of the rod attached to the eccentric. For some purposes the periphery of the eccentric is not surrounded by a hoop, but is immediately made fast to the tail of a long bar b, which may be provided with a friction-roller to facilitate the motion. Eccentrics of the latter kind are not necessarily circular, but may have any figure that can be required for modifying the motion of the apparatus attached to them. A bearing, as indicated in Fig. 14, is sometimes used; the eccentric being marked under Thwaites, vol. xxvi., p. 401, and many of similar forms are used in winding and spinning-machinery. Elliptical wheels, which may be used either plain or toothed, may be compared in their action to double eccentrics, or to two eccentric parts working for the purpose of raising and lightening, or they may be made to produce two rectilinear motions in each direction for every revolution of the shaft, whereas an ordinary eccentric produces but one. In silk-twisting machinery a peculiar kind of motion is produced by the use of two elliptical parts, one of which is worked on the other that the long axis of the one is opposed to the short axis of the other; so that while the axes or shafts upon which they are fixed are always at the same distance apart, the toothed peripheries of the wheels, notwithstanding their elliptical figure, are always in contact. By this ingenious arrangement the relative velocities of the two wheels are continually passing through a series of changes, which assist in the proper disposition of the thread upon bobbins.

The escapement wheels of clocks and other and several varieties are given under Horology, furnish types of another important class of wheels for modifying motion; and small-wheels (such as that marked a in Fig. 2 of the above article), pin-wheels, ratchet-wheels, and hose-wheels, all of which exist will be found in the works of artisans are among the ingenious contrivances by which the rotatory motion of a wheel and axle may be made to set to motion a train of complicated machinery, or to regulate and vary motion at pleasure. Ratchet-wheels are not only important when, as in the mechanism of the time-pieces, it is desirable to move one part of a machine backwards without affecting the rest, but they are also very important in cranes, jacks, and other machines for lifting heavy bodies, in which they are applied in such a way, in connection with regular escapements, that the parts of each are moved rapidly backwards and forwards, as to prevent the machine from running back when the moving-power is suspended for a time. In the common reciprocating saw-mill (Saw-Mill, vol. xx., p. 478), a ratchet-wheel, driven by a pull worked by an eccentric, is employed for moving the barks of timber a little between each stroke of the saws.

We now come to the consideration of wheels employed for the purpose of diminishing the effects of friction and inertia, such being the third class of wheels alluded to in the preceding article. The two main divisions of this subject are, first, the reduction of friction, and second, the diminution of inertia. Of what are commonly, but incorrectly, styled friction-wheels and rollers, generally, it may be observed that they diminish resistance by converting what would otherwise be a rubbing into a rolling contact, a property possessed in the faces of the various kinds of friction surfaces which are used in machinery and by the wheels of a carriage. Theoretically speaking, the same principle is exemplified in the use of oil and grease applied to diminish the friction of axes and bearings, since they effect the desired object by interposing between the surfaces which would otherwise come in contact, gas or vapor, in such a manner that the particles of which the surfaces are composed act as friction-rollers of infinitely small diameter. When the surfaces of two bodies are caused to pass over each other with a rubbing or sliding motion, their inequalities necessarily meet and oppose each other, and thereby cause resistance to the sliding motion, and wear of the opposed surfaces; and however smooth these surfaces may be, such resistance and wear will take place. In a material substance, or if the roughness of the surfaces should require a system of rollers or wheels, be applied between them. In such a case, full rolling contact such destructive attrition is obviated, because instead of the impressions which it being dragged against those of the surface itself, the rolls, they are successively, as it were, the particles and lifted up from them. Friction-rollers, which may be as large, but are not necessarily fixed, may themselves be made to roll upon the rolling surfaces, or interpose between the inherent motions, whether the two surfaces are interposed bodily between the peripheries of the wheels, or are not interposed, and the friction is transmitted through some intermediary medium, as in the case of the saw-mill.

Fig. 13.

Fig. 14.
The action of the friction-rollers is to interpose pressure upon the peripheries of the rolling bodies in all cases where the relative motion of both is designed to be interfered with. They do not entirely destroy rubbing or sliding friction, but remove its action to a smaller and smoother surface. Thus, in comparing the action of a wheel-carriage with that of a sledge, it will be seen that the extent of the rubbing made by the friction of the flat seats of a sledge is diminished in proportion to the circumference of the wheel and that of its axle, while the amount of resistance is further diminished by substituting smooth surfaces of metal, which may be lubricated with oil or grease, for the rougher surfaces of the road and those parts of the sledge which lie in immediate contact with it. When friction-rollers are employed to diminish the friction of a shaft or axle in its bearings, six of them may be arranged at equal distances round the circumference of the axle, and the friction of the parts so diminished as to prevent the escape of dust. In some cases the friction of axles or shafts is diminished by the use of friction-wheels, which act in a similar way to the wheels of a carriage, but more by diminishing the velocity and the extent of the rubbing surface than by reducing the friction itself. A sufficient illustration of this use of friction-wheels is given in the article Artwool, vol. iii., p. 71, in the machine contrived by him for measuring accelerated motion, where the axle of a pulley, instead of resting in ordinary bearings, rests upon the peripheries of a series of wheels, the axles of which of course revolve with greatly diminished velocity. Various plans have been tried for applying friction-rollers and friction-wheels to wheel-carriages so as to assist them in carriages, to diminish their axle-friction; but while some were invented on a small scale, with accurately formed models, many indicate an important advantage from such mechanism, the writer is not aware that any plan of either kind has been found generally applicable. There are advantages of a very considerable extent in the construction of fly-wheels. They are very commonly made of cast-iron, and for that material a velocity of eight feet per second may be very safely applied. Tredgold states that if a velocity exceeding twelve feet per second be required, the arms of the wheel should be of wrought-iron; and that thirty-three feet per second is the utmost velocity that can be safely given to a fly-wheel of which the rim, as well as the arms, consist of wrought-iron. Where fly-wheels are mounted upon shafts turned by cranks, it is also necessary to provide a counterbalance of a weight sufficient to equalize the resisting force. In some cases the counterbalance is merely the weight of the rim of the fly-wheel, but in others it is provided by a mass of metal that is made to revolve in the same manner as the rim of the fly-wheel. The action of these rollers resembles that of the rollers employed by quarry-men and masons in moving large blocks of stone; and one of the peculiar features of the construction of the wheel is the connection of the rollers with an endless chain, which not only keeps them from rolling forward or backward, but also moves them to and fro as required, the arms of the chain being moved by the motion of the engine. Full particulars are given in Hebert's "Engineer's and Mechanic's Encyclopedia," art. "Railway."
disc, such as might be procured by a transverse section of the trunk of a tree of tolerably regular form. Adams, in his work on "English Pleasure Carriages," gives a representation of a rude car with wheels of this kind, which is used for agricultural purposes in Ohio. Solid wooden wheels are still occasionally used in machinery, but if large they are usually formed of two or three thicknesses of planking fastened together, with the grain crossing in various directions. It is the practice to use the wheels for millwork, when not required to be solid, usually bound together, some fastened to the inner or outer sides, the inner sides or edges of which are left straight. The periphery may consist of three thicknesses of planking, each composed of six or eight such segments; and if the spokes be of sufficient length, a wheel of considerable strength may be thus produced. The arms or radii of the wheel are fitted to the inner or outer sides of the segments by bolting or other modes of fastening.

Wooden wheels are occasionally morticed into their slots for the centre; but a pastural plan is to use four arms arranged in two pairs crossing at right angles and hallowed into each other in the centre, where their intersection leaves a square opening for the shaft. This opening should be somewhat larger than the shaft itself, and the difference of size the like as a means for increasing or decreasing which afford the means of adjusting the wheel perfectly true upon the axle. In very large wheels, such as water-wheels, two complete sets of clasp arms, one on each side of the wheel, are used. In mounting face-wheels it is not unusual to support the whole weight of the wheel at a point some distance along the shaft, to resist the tendency of the trundle or pinion to force the wheel out of its true position at right angles with the shaft. Horsbeam is made to be the best kind of wood for the cogs or teeth of wheels.

In modern machinery cast-iron has almost entirely superseded the use of wood for cog-wheels of every description. If they do not exceed eight or ten feet in diameter, they may be cast in one piece, and the teeth be made movable so as to increase or decrease which size it is desirable to form them in two or more parts, because of the difficulty of cooling a very large casting without unequal contraction. Where the diameter does not exceed twelve or fourteen feet, the rim may still be formed in one piece and the teeth be morticed into it, the two to be bolted together. Large iron wheels are adjusted accurately at their axes by wedges or keys, but small ones may in many cases be adjusted by turning the periphery in a lathe after mounting. When cogs are cast upon a wheel, it is not unusual to make them cast one piece, but an economy is gained by having them cast separately, and then to reduce them to the proper size, and to a truer figure than could be obtained by casting, by chipping them with a cold chisel, and filing; but a serious objection to this plan is, that it removes the external crust of the iron, which forms a casing-case-hardening, and so exposes the teeth to rapid wear.

Carriage-wheels are the wheels in which the greatest amount of construction is called for, as they are exposed to strains far greater for their size and weight than almost any others. The peculiar nature of these wheels requires not only that the wheels be made exceedingly strong, but also that they possess a degree of elasticity sufficient to enable them to bear the violent concussions to which they are often subjected, and in which the wheel is occasionally bent out of the starting of any of their numerous joints. An ordinary carriage-wheel consists of the nave, a cylindrical block of wood, usually elm, which forms the centre of the wheel, and which is pierced longitudinally with a hole to receive the axle. The nave is framed into the nave at equal distances; and the felloes, which are circular segments framed on to the outer extremities of the spokes, and forming collectively the periphery or rim of the wheel. The external surface of the felloes is usually protected by a covering of iron, called the tire, which may either be put on in several pieces, or traced, the joints of which are made to alternate with those of the felloes, or in a single piece, forming a hoop.

The simple joint to which this tire could be formed would be that in which the spokes would stand at right angles with the axis, and would form a flat or plane figure when the wheel is viewed edgewise; but such a wheel would be ill adapted to meet the lateral shocks to which a carriage-wheel is exposed. The more common form is that called the disked wheel, in which the centre or nave is made to fall back a little from the plane of the felloes, so that the face of the wheel is not flat, but slightly concave. The elasticity of this form is a very great recommendation, and it possesses also this advantage. When the axe of the wheel is slightly bent down towards its extremity it is impossible for the lower half of the wheel to carry a nearly vertical position, which will enable them to bear the greatest possible weight, the upper half of the wheel will have such an inclination as to throw particles of dirt, caught up in its revolution, away from it. A further advantage of this arrangement is that such a wheel, mounted as described, is not likely to exert injurious pressure upon the linch-pin or other contrivance retaining it upon the axle, since the weight tends to keep the wheels upon their axes without any aid from the linch-pins. Very strong wheels are occasionally made in a double-dished form, or with the spokes alternately inclining outwards and inwards from the felloes, so as to lie on the nave or nave of the wheel the base of a pyramid of which the felloes forms the apex; but such wheels are very deficient in elasticity, and consequently will not bear much concussion. In ordinary dished wheels the spokes are arranged in two sets, being alternately more upright and more inclined towards the nave, and the lateral spokes are sometimes set absolutely straight or square with the nave. The dished form of wheel, together with the bending of the axle, involves some increase of axle friction, and the use of the wheel with a circular tire, which cannot possibly roll in a straight line without a degree of rubbing friction most injurious to the road, and which also increases the draught. Some years ago the use of conical wheels for wagons, combined with the inordinate breadth of the ground and the numerous legs of the carriage, increased to a most absurd extent, and broad-wheeled wagons were used which were far better adapted for grinding stones into dust and mud than for the purpose of locomotion. This extravagance has now seldom seen, and for right reasons, the general opinion is, that a wheel of the ground is greater in proportion to the bulk and strength of the wheels than in any others, the use of moderately dished wheels can hardly be said to be attended by any practical inconvenience. The tires of such wheels are often rounded, so as to have an exceedingly narrow bearing upon a firm hard road.

Few mechanical operations of equal complexity, and requiring an equal amount of precision, have received so little aid from machinery as the manufacture of carriage-wheels. Even in the times of the great Cyrus of Persia, at Pirimico, near London, for making wheels by machinery, and although the nature of the operations is kept strictly secret, they appear to be of a most satisfactory character; the wheels produced being very superior in truth, firmness, and durability to any other, but have not shown sufficient proof of the statement, that in addition to the superiority occasioned by the application of the machinery to the fitting of the several parts, the wheels produced at these works are put together by pressure only, without the aid of percussion. In ordinary wheels the neatness and strength is increased by the application of a hoop of iron to each end of the nave, to enable it the better to resist the strain of the spokes. The spokes, which are usually formed by turning the nave, are set in proper form after being driven into the nave, and are usually cut to a narrow edge in front to lighten their appearance. Wheels have been made with the periphery or two pieces, or two pieces, bent into the required form, but have not been found successful, because, among other disadvantages, the wood is injured by the long boiling required. In high, coach-wheels, from 4 feet 3 inches to 4 feet in bore, there are 14 spokes, and the foot lower, there are commonly 18 spokes, and the usual arrangement is to have half as many in the nave, and as spokes. The felloes are dovetailed further secured by inserting an iron hoop, and by the hoop tires, which are a system of hoop-making, as it is called.
the whole of the wheel together with irresistible force. The tire is made very hot, and the wheel is made of such a size as only just to receive it when it is thus expanded; but so soon as the hoop is brought into its proper place, water is thrown upon the wheel to cool the tire, and to prevent the wood-work from catching fire, and the rest of the sudden contraction of the hoop is to compress the fellos, and to force each spoke into a slightly curved form, so that when the complete wheel forms a flat dome-shaped figure, admirably adapted, by its combined strength and elasticity, for the purpose for which it is designed. The tire is further secured, after cooling, by a few pins driven through it and the fellos, and riveted inside the latter.

While the importance of a certain degree of elasticity in wheels cannot be too much insisted on, it is an error to suppose that this advantage cannot be obtained from plain iron springs of the carriage in the wheels, as several ingenious inventors have proposed. On this point see SPRING-CARRIAGE, vol. xiii., p. 388.

Having found during his experiments on steam locomotion upon the principles of the railroad, the construction were not strong enough for his purpose, Mr. Hancock contrived and patented a wheel in which the nave is abandoned altogether, and the inner ends of the spokes are formed into wedges which abut against each other, and are held together by a kind of arm in the form of a box. These are firmly secured in their places by an iron plate on each side of the wheel, and a bolt passing through each spoke. Though too rigid for very rapid motion, this wheel is exceedingly strong, and its simplicity of construction makes sensible to the hands of the great recommendations of it.

The rapid motion of railway carriages, coupled with their great weight, so greatly increases the effect of such conclusions as must occur on even the smoothest road, that the wheels have often been found to fail them. Cast-iron wheels have been much used on colliery railways, and in some cases where rapid motion is required; but while they may be made abundantly strong, as far as the direct pressure is concerned, their brittleness renders them very liable to injury when passenger horses are employed; plans for the combination of wrought-iron and cast-iron in the same wheel have been devised; but while some of these have been brought into operation, wheels entirely composed of wrought-iron have been by far the most generally adopted. The facility with which that material may be worked into any form has led to an endless variety of plans, some of which are highly ingenious, for combining the requisite degree of strength and elasticity. In some wheels the annular space between the central boss or nave and the rim is filled up by a series of octagonal floats, of thin bars of iron, abutting against each other; in others there are spokes, but instead of consisting of single rigid bars, each consists of two halves, having a slight degree of curvature. By these and similar contrivances elastic force is given to the wheel, and without distorting the form of the wheel, it is evident that the wheels might revolve on axes at right angles to each other. This construction is at present in use for some kinds of machinery; occasionally also the teeth consist of small blocks of wood let into the annular spaces on the external face of the wheel, and without the edges cut off diagonally, so that each block has the form of half an octagonal prism. A small wheel having cylindrical staves, or spindles, fixed between two circular bands or plates of metal, in positions parallel to the axis of the wheel is called a spur-wheel: but when the teeth are perpendicular to the plane of the wheel, the latter is called a crowned or contrate wheel. If the teeth are cut on the circumference of a wheel, in a direction oblique to its plane, the wheel is said to be crowned, and the name of contrate is derived from the manner in which it is to be carved in planes making any angles with one another.

The least attention to the manner in which the teeth are cut on the circumference of two wheels act against each other. In the ends of the teeth the advantages the force of the teeth is to be felt only when the acting faces of the teeth some advantages would be gained in respect of the steadiness of the rotation; and Blore, in his "Treatise on the Epicographia," mentions that he saw at a piece near Paris a machine executed with cast iron but the name of the man who invented the form of the curve which was employed is not explained. Montelena offers a conjecture that the Danish astronomer Rømer was the first who made the remark that the epi-epicographia form is the most proper for the acting faces of the teeth of a wheel.
and he states that such a remark occurs in a memoir which was read at a sitting of the Académie, in 1675. This conjecture is supported by a passage in the works of Wolfius (tom. 1., p. 654), and by the evidence of Leibnitz, in the "Comm. Philos.," tom. ii., p. 178: the latter observes that while he resided at Paris the merit of the discovery was ascribed to Römer. La Hire however asserts, in the work above mentioned, that he had discovered this property of the epicyclic in 1674, and had communicated it to several mathematicians.

Besides a uniformity of action in which the teeth of wheels should exert upon one another, their figure should be as little as possible liable to derangement; they should consequently be made of metal rather than wood. It has been thought however that in the larger kinds of machines the action is more gentle if the teeth of one wheel are made of hard wood, and those of the other of cast-iron; both the wheels being of the latter metal. The irregular shocks to which a toothed wheel badly constructed is liable, are the causes that a considerable part of the work may be done by a machine, and this evil is diminished by having the teeth in each wheel as numerous as possible; the number will however depend on the magnitude which each tooth must necessarily have in order that it may possess the requisite strength. When a toothed wheel drives or gives rotation to a pinion, the ratio between the radii of both will depend upon the power or the velocity which may be required; but the disposition of the wheel and pinion should be such that the pressures of the teeth mutually exert against each other is the least possible; and the form of the teeth should be such that the moving power at the circumference of the wheel may bear a constant ratio to the resistance at the circumference of the pinion.

When a wheel is employed to drive a pinion, the pressure on the pivots of its axle is the resultant of the weights of the wheel and whatever is attached to it, the pressure of the moving power applied at its circumference, and the pressure of the moving power applied at its circumference; it is evident therefore that if the pinion is placed on the same side of the axle of the wheel as the moving power, the latter acting vertically, and if the axes of both wheel and pinion are in the same horizontal plane, the results will be the least possible; for it will be equal to the weights of the wheel together with the difference between the downward pressure of the power and the upward re-action of the teeth of the pinion against those of the wheel at the place of contact. But if the pinion be on the opposite side of the axle of the wheel, the pressure upon this axle will be the greatest possible; for it will be equal to the weight of the wheel together with the sum of the moving power and the re-action of the teeth of the pinion, all of which in this case acts in a direction opposite to the support of the wheel will be less when the wheel and pinion are in the same plane, than when they are perpendicular or inclined to each other; for in the first case the pressure is perpendicular to the axis, but in the other the obliquity of the action produces a considerable strain on the wheel. When the same wheel drives two pinions, the most favorable positions for these last are those in which their axes are in the same plane as the axis of the wheel. When however the latter axis has a great burden to support, it may be advantageous to dispose both the pinions on one side of a vertical line drawn through the axis of the wheel; for then the re-action of the pinions upwards will tend to diminish the pressure on the supports of the axle.

The above considerations, or the radii, of two circles which are to act upon each other like a wheel and pinion, is known from the power, or velocity, which is to be obtained: the distance between the centres of the two circles is also given. Therefore if a line as AB is drawn, and this line may be considered as if so that AX shall have to BM the given ratio. The circles whose radii are AM and BM are called the pitch or primitive circles; and by these the places and forms of the teeth are determined.

If the number of teeth for a wheel or pinion is given, and also the distance PQ between their middle points, supposed to be measured as a chord of the primitive circle, the radius of that circle may be found; for if n be the number of teeth, \( \frac{360}{n} \) or \( \frac{180}{n} \) will give the angle PAR subtended by half that chord, and, by trigonometry, rad. (\( = 1 \)) = \( \cos \theta \) \( \frac{180}{n} \) :: PR : AP, and AP is the required radius of the primitive circle.

When it is required to produce a considerable angular velocity with the smallest quantity of wheel-work, the diameter of each wheel should be eight or nine, or four times as great as that of the pinion on which it acts, and a pinion should have not less than six or eight teeth. It is recommended also that the number of teeth in a wheel be not an exact multiple of the number in the pinion; since then each tooth of the wheel will act successively on different teeth of the pinion, and thus the latter teeth will be less worn than if the same teeth were constantly met in each revolution.

One of the most simple ways in which a wheel may impel another is that in which the teeth of the first wheel work between the cylindrical staves of a lantern; and it may be easily shown that, in this case, an epicycloidal form is the most advantageous for the acting faces of the teeth. For let A in the above figure be the centre of the first wheel and B the centre of the lantern; also let AM and BM be the radii of the primitive wheels, or of such as would be constructed to produce the required power if one of the wheels moved the other by means of a strap passing over their circumferences, or by the friction of their circumferences at the point of contact. Then, if the diameters of the staves in the lantern are supposed to be infinitely small, and if MN represent a side of a tooth coming first in contact with such a stave at M in the line of the motion, the motion of the wheel will have been as the arc MN will be brought into the position MN', for example, when the lantern being turned about B in the direction DM, the stave at M is impelled forward to some point m, so situated that the circular arcs MM' and MM are equal to one another. Let now the arc MB be such as would have been described by the point m if the circle CD had rolled on the circumference of AC from the time that m was in contact with C till the centre B came to the position which it has in the figure; then it is evident that MM' or MN will be a portion of an epicycloid, of which BD is the epitrochoid, or generating circle, and AC the deferent [TROCHOIDAL CURVES], and it is a property of such curve that a normal to it at m (any intersection of the generating circle with the curve) will pass through the point of contact M of AC and BD. Let also the straight line MM' be the radius of curvature for the point m. Hence if one face of a tooth on the wheel AC have the form of such epicycloid, the pressure exerted on the stave of the lantern will be always in the direction of a line drawn through M and the stave in contact with the tooth: the action of the tooth on the stave is therefore direct, or without any sliding movement; and because the arc MM' is always equal to the arc MM', the angular motions of the circles will be the same as in the direction of AC the circumferences or radii, or the rotation of the form will be uniform when that of the wheel is so.

Since the staves in the lantern must have a greater radius, as MN, a curve equal and similar to that passing through m will serve for the form of the staves. Such curve may be traced by rolling the circle AC round MM' into any number of equal arcs as centres drawing straight lines MN' to MM; a line as on touching all these curves through M with AC.
required curve. If it be intended that a tooth of the wheel AC should not act upon a slave of the lantern till a arrives at M in the line AB, the centre of the slave should be placed so that a may be where M is; and then about half the slave, on the right hand of the diameter passing through it, being unnecessary, it may be omitted, and the slave may consist of about half a cylinder: if however the slaves are made entire, notches must be cut between the teeth of the wheel AC in order to allow them to pass while the wheel is revolving. If Pp, Qq represent two teeth formed as above described on the circumference of the wheel, the distance between them must be such that the face p may begin to act on a slave immediately upon the face q quitting it.

The correct formation of epicycloidal teeth is perhaps seldom attempted in practice; the curve however may be easily traced by means of its equations, which, agreeably to the notation employed in the article on TROCHOIDAL CURVES, are

\[ x = (a + b) \cos \phi - b \cos \frac{a + b}{b} \phi, \]
\[ y = (a + b) \sin \phi - b \sin \frac{a + b}{b} \phi; \]

where \( a = AM, b = BM, \) the angle \( M'AB = \phi; \) and \( M'B \) being let fall perpendicularly on \( AM' \) produced, \( x = AM = b \phi. \)

If it were required to turn a pinion by the revolution of a wheel, the teeth of both having like forms, and it were also required that the teeth of the wheel should commence acting on those of the pinion at the instant when the point of contact is in a line joining the centres A and B of the wheel and pinion; it may be easily shown that, in order to produce uniform movement, the acting faces of the teeth should have the form of epicycloids. Thus, let AC, BC be the radii of the primitive wheels, and let CD be an epicycle of any convenient magnitude; let also Cm, Cn be epicycloidal arcs, the former supposed to be described by the point C in the circle CD, as this circle revolves on the exterior circumference of the deferent circle AC in the direction CE, and the latter by the same point, as the same epicycle revolves in the interior circumference of the circle BF in the direction GF, the line CB being a tangent to both arcs. Then let P and Q, on the circumferences of the circles AC and BC, be two situations of the point p in the epicycle, at an instant when the three points are in contact at P; and let Pq, Pa be arcs similar and equal to Cm and Cn; these will be described by the point p when the epicycle rolls on one circle over the other arc PC and on the other over the arc QC. Now it is demonstrated by mathematicians that a normal to an epicycloid at the point where it is cut by the circumference of the generating circle passes through the point at which this circle is in contact with the deferent; therefore the straight line AC will be a normal to both the arcs Pq and Pa, or those arcs have the same tangent at the point a; that is, the arcs are in contact with each other at every point a in which they meet; and since the equal arcs Cm, Cq are described in the same time, it is evident that, as in the former case, the wheel and pinion move uniformly.

A wheel and pinion formed in this manner would be such as is represented in the annexed cut: the point C in in the one of the wheels begins to act at the point C of a tooth in the pinion; and in moving from C to P the former tooth drives C' to Q, where these teeth cease to act on one another. During this movement the surface Cm or Pn' is in contact with C'n or Qn' in one point; consequently no friction takes place between the surface or only that which arises from the imperfect formation of the teeth.

The arcs Ca or Qa in the preceding figure, or the arcs C'n, Qn' in the present figure, are called hypocycloids but as the generating circle CD above may have any magnitude, let CD, its diameter, be equal to the radius CB of the pinion; then the hypocycloidal arcs become straight lines in the directions of diameters of the circle CB: in which case the teeth of the wheel should be epicycloids described by a generating circle whose diameter is CB, and the acting faces of the teeth of the pinion should be planes passing through B, as in the annexed cut.

The uniformity of action can however only take place between the faces near the line AB which join the centres of the wheels; any point of contact at the same time will be subject to small irregularities and a certain amount of friction.

If it be intended that the teeth of the wheel shall bear to act on those of the pinion before the point of contact on a given tooth arrives at the line AB, and shall terminate when it comes to that line, the reasoning before used may be applied; it being necessary merely to consider Br the larger wheel, and AC as the pinion, so that now the faces of the teeth in the wheel are hypocycloids and the corresponding faces of the teeth on the pinion epicycloidal: then Q (Fig. 3) must be considered as the point of contact, and C the point at which the action of the tooth on Pn or Cn terminates. The acting faces of the teeth of BC, considered now as the wheels, must be planes leading to the axis of that wheel, as in Fig. 4, in which case the diameter of the generating circle by which the faces of the teeth in AC are formed must be equal to the radius CB of the larger wheel. The labour of the formation is much diminished by this disposition of the teeth on the wheel and pinion; for the large wheel contains the greater number of teeth, and these have less plane faces.

In forming the epicycloidal arc Pq, Fig. 2, from the above equations, it must be observed that AC = a, GB = AB = x, and Ha = y. The hypocycloidal arc Qq may also be described by means of its equations, which are the same as the equations for the epicycloid, except that for \( a + b \) read \( a - b \), and the sign of the second term in the expression for \( x \) is positive. Here \( BQ = a, GC = b, \) the angle \( CBq = \phi, \) \( BK = x, \) and \( Ka = y. \)

The involutes of circles which were prepared by the Robison for the form of teeth, have some advantages over the constructions above mentioned, measured as a great number of such teeth can be made to act at the same time, and thus the pressure on each is diminished. In order to describe these involutes, let A be the centre of the wheel and B that of the pinion; let also AC and BC...
be the radii of the primitive wheels: from A and B as centres describe circles whose radii AM and BN have the same ratio to one another as AC has to BC, and draw the straight line XY touching these last circles. Then if a flexible line coinciding with the circumference of the circle AM be unwrapped, let its extremity M may describe the curve MN, and another such line coinciding with the circumference of the circle BN be unwrapped so that its extremity N may describe the curve Nn; those curves MN and Nn will be the required forms for the acting faces of the teeth, and the faces will be always in contact with one another in a certain point C in the line XY, which from the nature of the curve is a common normal to both: the pressures of the teeth against each other will always be in the direction of that line (which is a common tangent to the two circles) as if they were applied in that direction at the extremities of the radii AX and BY; and the angular motions of the two circles will be to one another in the constant ratio of those radii, that is of AC to BC: consequently the motions will be uniform.

In Dr. Young's 'Lectures on Natural Philosophy' (vol. ii. p. 53) it is shown that when the teeth of two wheels are in the form of the involutes of circles, the relative velocities of two teeth in acting on each other, or the velocities with which their acting surfaces slide on each other, vary, when one wheel moves on the exterior circumference of the other, with the sine of the sum of the two angular distances of the points of contact from the line joining the centres of the two circles. If one wheel moves in the concave circumference of another, the relative velocities vary with the sine of the difference between the angular distances. It is added, that the mechanical effect of friction in resisting the motion of a machine is so much the greater as the relative velocity is greater.

In general the teeth of a wheel AC are made to act on the teeth of a pinion BC before the place of contact arrives at the line joining the centres of the circles, and to continue the action for some time after that arrival: in this case it is evident, from what has been before said, that ab should be part of a hypocycloid formed by any generating circle rolling on the concave circumference MN of the primitive wheel, and bc should be part of an epicycloid formed by any generating circle rolling on the convex circumference of the same wheel. The portion ab of the circumference of the pinion should be part of an epicycloid formed by the first generating circle revolving on the convex circumference RS of the primitive pinion, and be part of a hypocycloid formed by the second generating circle revolving on the concave circumference of the same pinion. To avoid however the trouble of forming the face of every tooth with two different curves, La Hire recommends that the parts ab and be be plane surfaces, as if the diameter of the generating circle for describing the former had been equal to the radius AC, and the diameter for describing the latter had been equal to BC. This is also the construction recommended by Buchanan, in his 'Treatise on Mill-work.'

Since a straight line may be considered as part of the circumference of a circle whose radius is infinite, an epicycloid formed by a generating circle rolling on a straight line becomes a cycloid; and hence it is evident that if a piece of rectilinear rack-work be employed to give motion to a pinion, its teeth should have their acting faces cut in the form of a cycloid, whether the teeth of the pinion be small cylindrical staves, or have plane faces trending to the axis; but in the former case, the radius of the generating circle should be equal to that of the pinion, and in the latter it should be equal to half that radius.

If a wheel to turn surfaces tend to make two teeth in the circumferences of both, and the planes of the two wheels are to make with each other any given angle, the acting circumferences of the wheels must evidently be frustrums of cones which have a common vertex at the point where the mathematical axes of the former wheels are produced. The numbers of revolutions which the two wheels are to make in the same time are supposed to be given; and, by mechanics, the radii of the wheels must be inversely proportional to the numbers of revolutions: therefore these radii are known.

Let A and B be the centres of the wheels, CA and CB the axes of the revolving cones, of which C is the common vertex; and let AD, BD, perpendicular to CA and CB, be the radii of the wheels on their exterior faces; then CD will represent the line in which the convex surfaces of the two cones may be supposed to be in contact, and its position may be determined, since it divides the given angle ACD in two parts ACD and BCD, which have to one another the given ratio of AD to BD, or so that

\[
\sin \angle ACD = AD \div BD \times \sin \angle ACD.
\]

The conical surfaces of the wheels being cut into teeth having directions tending to the point C, the wheels will mutually act upon each other to produce revolution. For simplicity, let it be supposed that the teeth of the wheel DP are in the form of small conical staves or spindles whose axes and convex surfaces pass through the point C: then if a spindle were supposed to be a mathematical line, the conical surface described by such line in its revolution about CB, from the time that it is in contact with the oblique surface of DP, would be the form to be given to the acting sides of the teeth on the latter surface; and a curve surface of like form imagined to be situated under the surface so described, at a distance from it, at every point, equal to the semidiameter of the conical spindle at that point (the spindle having a given magnitude) will be the required figure of the acting surfaces. The curve line traced by either extremity of the axis of a spindle during the movement is called a spherical epicycloid, being on the surface of an imaginary sphere having C for its centre.

In the formation of such machines the generative motion is not required; and in such cases the wheels are either divided by the teeth unequally on the circumference, or the axes on which they revolve are placed at certain distances from the mathematical centres of the wheels.

The principal writers on the mathematical principles of the teeth of wheels are, La Hire, 'Traité des Epicycloïdes;' Camus, 'Cours de Mathématique;' and Euler, 'Novi Comment. Petrop.'

WHETSTONES are a smooth flat stone used for whetting or sharpening edged instruments by friction. Whetstones, Vol. XXVII. - 2 T.
which are sometimes called *hones*, are made of various kinds of hard close-grained stone, and are moistened, when in use, with either oil or water. The latter is preferred by some, because it permits closer contact between the stone and the metal, but as it allows closer contact between the stone and the metal, it does not appear so well adapted for producing a very smooth surface. The proper use of a whetstone involves a degree of skill and dexterity which can only be obtained by long and frequent practice in the art. It is very generally considered as a necessary part of a joiner's trade, and as a whetstone is experienced in the use of a common whetstone to set or sharpen razors, pen-knives, &c. with facility, Mr. Fayer, of Pontefract, contrived some years since a hone consisting of a stone mounted in a bar of brass, the ends of which are filed into round pivots, which rest in bearings attached to the mounting of the hone. One side of the bar is made smoother than the other, and in order to use the hone, the roughest side is first turned uppermost, and a little of the hone is taken over the bar, and the operation repeated upon the smoother side, with finer powder of either the same kind of stone or of that known as water of *Ayr* stone. As the whetting proceeds, the powder becomes finer and finer, and therefore gives to the hone an increase of the roughness of the stone. For convenience, the mounting of the hone is provided with two small boxes to contain a supply of powdered stone.

**WHIG.** [Chrest.]

**WHICHCOTE, BENJAMIN, D.D.,** was the sixth son of Christopher Whichcote, Esq., of Whichcote Hall, in the parish of Stoke, Shropshire, and was born there 11th March, 1610. He studied at Emanuel College, Cambridge, where he was admitted in 1626, and of which he was elected a Fellow in 1633. Having taken his degree of B.D. in 1649, he was in that year, or early in the next, admitted to the living of Shrewsbury, in Shropshire, which vacated his fellowship, he went to reside there, and married; but early in the next year, on the election of Dr. Samuel Collins from the provostship of King's College, he was admitted to the extraordinary fellowship of that college to the rectorcy of Milton, in Cambridgeshire, on which he resigned his Shrewsbury living. At the Restoration Dr. Whichcote was removed from his provostship by the new government, rather to mark their disapprobation of his sermon at the public ordination, in 1660, in which he had offered, in words which the chancellor had written, that the man or his conduct, for he had never signed the Covenant, nor taken part in any of the violent proceedings of the times. He retained his rectorcy of Milton, and, coming up to London, was chosen minister of St. Anne's, Blackfriars. From this church he was burned out by the great fire in 1666; but two years after he was presented by the crown to the vicarage of St. Lawrence, Jewry, on the promotion of Dr. Williams to the bishopric of Chester. He died while on a visit to Cambridge, at the house of his friend Dr. Cudworth, master of Christ's College, in May, 1683.

Dr. Whichcote is regarded as one of the heads, if not the chief founder, of what is called the Latitudinarian school of English divines, as holding those views of Christianity which are distinguished by the two important characteristics, that they are liberal and toleran-
venereal in Scotland (from whence it was borrowed) for corrupt and sour why. In point of fact, whig, according to the Scottish lexicographers, is not whey, but the slightly adulterated serum of butter-milk.

Quite a different account from this however is given by Burns in his 'Tamburlaine the Great,' the Old Time (i. 48), under the year 1648, that writer says, 'The south-west counties of Scotland have seldom corn enough to serve them round the year, and the northern parts producing more than the need, those in the west came in the summer to buy at Leith the store there and from the word whiggan, used in driving their horses, that all were called whiggoners and shorter, the whigs. Now, in that year, after the news came down of Duke Hamilton's death, the Whig leaders animated their people to rise and march to Edinburghe, and the head of their parishes, with an unheard-of fury, praying and preaching all the way as they came. The Marquis of Argyle and his party came and beard them, they being about to drive the whiggoners inroad; and ever after that all that opposed the whiggars came in the court to be called whiggs, and from Scotland the word was brought into England, where it is now one of our unhappy terms of distinction.'

There can be little doubt that this is the true origin of the name Whig, and that it was really its previous application to the Scotch Covenanters that led to its revival as a designation for the opponents of the court in England in 1679. Kirkton, in his 'History of the Church of Scotland,' has noticed that the men white; and as the term may have been used of the English Tories of 1679 to carry a peculiar significance and appropriateness in reference to the sour and rigid temper which they attributed to their opponents, and the want of cordiality and substance with which they changed their principles, independently of its previous application to the Covenanters. There may have appeared to the common feeling, too, that being some of things in giving an object to the common-devices and warm-bloodedness of the royal prerogative, and a Scotch one to the more cool and argumentative wranglers for popular rights. It may be said with considerable truth that, nationally or generally, the name Scotch Whig is Whigs by temperament or mental constitution.

With regard to the party opinions of the Whigs, it is scarcely necessary to add anything to what has been stated under the word Tory. The Whigs of the last century and a half have been generally viewed as the representatives of the friends of reform or change in the antient constitution of the country, ever since the popular element became active in the legislature, whether they were called puritans, non-conformists, round-heads, covenanters, or by any other names. The revolution of 1688, the first of the Scotch Whigs were Whigs by temperament or mental constitution.

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W I

WHIN. [ULEx.]
WHINCHAT, Saxicola rubetra, Auct., Motacilla rubetra, Linn.
Description.—Old Male.—Top of the head, sides of the neck, and upper parts of the body, blackish-brown; each feather with a wide border of rusty-yellow; above the eye an elongated streak of white, reaching to the occiput; throat and longitudinal streak on each side of the neck pure white; front of the neck and breast fine bright rusty; a great spot on the wings and tail of pure white; extremity of tail, as well as the two middle quills, and all the shafts, blackish-brown. Length nearly five inches.
Female.—With yellowish-white wherever the male has pure white; the white space on the wing less, and all the feathers with a small brown spot; the rust of the breast is less there, and the lower parts, as well as the upper part of the tail, are rusty white.
The Young have white and greyish spots all over their plumage.
This is the Grand Traquet, Traquet, Groulard, Tarier, Thyon, Semel (in Lorraine), of the French; Grosser Hingenfanger, Gestettenclag, and Braunhefliger Stein- schmätzer, of the Germans; Sultas-bastone con la gola bianco and Stiacone di Iicchini; Furzechat and Blackberry-eater of the modern British; and Clocher gr de l'ancien British.
Geographical Distribution.—Norway, Sweden, temperate Russia, but not Siberia: all southern Europe to the Mediterranean shore: common in Smyrna in winter (Strickland). In the British Islands they are generally, but not numerous in winter; abundant in summer; have been seen in the Hebrides, but are not recorded as having visited Orkney or Shetland. They arrive here about the middle of April; but, unlike the Stonechats, always, as a general rule, depart in autumn. Mr. Yarrell observes that the similarity in various points between the two species has induced a partial belief that the Whinchats, as well as the Stonechats, remain here during the winter, but he is not aware of more than two authentic instances of the Whinchat being seen here in that season: Mr. Nevill Wood records one, on the authority of Mr. H. Barlow, of Cambridge, in the mild winter of 1833. The last-named observer saw it hopping about near some furze-bushes in his neighbourhood, on the 15th of January and 20th of February, but only on those two occasions, though the common was visited on every clear day in those two months. The Rev. Robert Holdsworth, of Brixham, gave Mr. Yarrell the other instance: in a path near his residence at the entrance of the river Dart, in one of the warmest spots in England, the Reverend gentleman found a Whinchat dead during a very severe frost on the 20th January, 1829. The wind was north-east.
Habits, Food, &c.—The flight of the Whinchat is undulating, and it flies from bush to bush, perching on one of the topmost twigs. Furze common are its favourite haunts. Worms, insects, small shell-mollusks, and slugs form its principal food, but it also eats berries. The nest resembles that of the Stonechat, and is formed of dry grass stalks and a little moss, the lining being finer bents or stalks. It is usually placed on the ground; Mr. Sweet says that the old birds cover it with dry grass, so that it is impossible to find it without watching them. The eggs are five or six in number, bluish-green, with a few small dull reddish-brown spots. There are generally two broods, the first appearing towards the end of May.
The song is very pleasing, and resembles, according to Bechstein, that of the Goldfinch; and the bird will sing not only during the day, but in the evening, and sometimes at night. Mr. Sweet says, that such as are caught young may be taught any tune, or will learn the song of any bird they hear, but he does not think their own good. One that he bred from the nest learnt the song of the Whitebreast, Redstart, Willow Wren, Nightingale, and Musel Thrush, which it frequently heard singing in a neighbouring garden. Of this latter song it was so fond, that Mr. Sweet was frequently obliged to put his favourite out of the room, not being able to bear its loud notes. He speaks of it as the best bird he ever kept of any kind: it sang the whole year through, and varied its song continually; its only fault was its strong voice.
Whinchats become, like the Wheatear, very fat in August, and, though smaller, are equally delicate for the table.
In the Portraits d'Oiseaux the following quatrín is printed under the figure of this species:

Ex summiteles bolusse h lede
Inaccessim le Traquet on Tarier
Et le voyant sans cease varier,
Comme un tartouf de moullu on l'appelle.

The Whinchat: upper figure, female; lower, male.

Description.—Bill blackish; mouth very large, pale flesh-colour within, armed along the sides with numerous long, thick bristles, the longest extending more than half an inch beyond the point of the bill. Eyes, blackish.
Plumage above variegated with black, brownish-white, and rust, and colour, sprinkled and powdered with numerous minute streaks and spots. Upper part of the head blackish-grey, marked with a longitudinal stripe of black, with others passing out from it. Back darker, finely streaked with black in the sutures. Upper parts very light, yellowish-white, variegated with a few oblique black spots. Tail rounded (ten feathers, external 1½ inch shorter than those in the middle), the three outer feathers on each side black.
ab-brown for half their length, and thence white to their extremities; the exterior feather edged with deep brown with paler tips; the webs of the middle toes without white at the ends, but with herring-bone figures of black and pale ochre finely powdered. Cheeks and sides of the head brick-colour. Wings spotted with very light and dark brown, the pencilled white tips of the quills most visible. Across the throat a narrow white semicircle; breast and belly irregularly mottled and streaked with black and ochre-yellow. Legs and feet light purplish flesh-colour, seamed with white, feathered nearly to the feet, middle claw prominent. Middle toe 9½ inches, and the expanded wings 16 inches; female about an inch less. (Nuttall.)

**This is the *Weccolis* of the Delaware Indians; and *Whioppo-Will* of Lawson, "so named," says the latter, "because it makes those words exactly. They are the biggess of a thrush, and call their note under a bush, on the ground, hard to be seen, though you hear them never so plain.**

### Geographical Distribution.

**America.** Nuttall says that this species arrives in the Middle States about the close of April or beginning of May, proceeding in its vernal migration along the Atlantic States to the centre of Massachusetts, being rare, and seldom seen beyond lat. 43°; and yet, he adds, in the interior of the continent, according to Veildot, they continue as far as Hudson's Bay, and were heard by Mr. Say at Pembina, in lat. 49°. 'In all this vast intermediate space,' continues Nuttall, 'as far south as Natchez on the Mississippi and the interior of Arkansas, they familiarly breed and take up their residence. About the same time that the sweetly echoing voice of the Cuckoo is first heard in the north of Europe issuing from the leafy groves, as the sure harbinger of the flowery month of May, arrives amongst us, in the shades of night, the mysterious ***Whiop-poor-Will.***'

Mr. Clayton gave the following account of this bird, that he observed this bird on the northern shores of Lake Huron only, the fifteenth parallel being probably the limit of its range: it arrives, he adds, in Pennsylvania about the middle of April; the elevated dry 'Barrens of Kentucky' are its favourite resorts, and it is very common heard in the marshy tracts of the Susquehanna. Habits, Food, &c. — *Phalaroe* and other large nocturnal insects, beetles, grasshoppers, &c., &c., form the food of this night-jar. The two eggs, which are greyish white, almost covered by irregular and confusentumber-black bands and spots of the same size at both ends, are deposited about the second week in May in the Middle States, but considerably later in Massachusetts. There can hardly be said to be any nest, but the female selects some secluded spot in the forest, near a forest river, or a clear brook; and then, after she has alighted in the hollow rock, and always in a dry situation, according to Nuttall, who remarks, that this deficiency of nest is simply made up by the provision of nature, the, like parasites, the young are soon able to run about after their parents; and, when they are old enough, the parent (as is frequently so in countless numbers of the natural world) leaves them in charge to their own care, and only returns when they are able to follow him by the light of their own eyes. (Nuttall.)

### Check-Will-Widow, Caprimulgus Cardinarius. Cuculidae.

**Description.** The whole body-plumage sprinkled and mottled with brown, rufous, black, and white; on the tail are zig-zag and herring-bone figures of black. A slight whitish band runs across the breast; black, brown, and yellowish-brown, intermixed in various shades, the legs and feet being bright yellow. Length, 13 inches; across the expanded wings, 26 inches.

**Geographical Distribution.** Seldom to the north of Virginia, but in the interior extending up the banks of the Mississippi to the 38th degree. Arrives in Georgia and Louisiana about the middle of March, and in Virginia, early in April. Returns from the United States, probably to winter in some part of the tropical continent, about the middle of August.

### Chok-Will-Widow, Caprimulgus Cardinarius. Cuculidae.

**Description.** The whole body-plumage sprinkled and mottled with brown, rufous, black, and white; on the tail are zig-zag and herring-bone figures of black. A slight whitish band runs across the breast; black, brown, and yellowish-brown, intermixed in various shades, the legs and feet being bright yellow. Length, 13 inches; across the expanded wings, 26 inches.

**Geographical Distribution.** Seldom to the north of Virginia, but in the interior extending up the banks of the Mississippi to the 38th degree. Arrives in Georgia and Louisiana about the middle of March, and in Virginia, early in April. Returns from the United States, probably to winter in some part of the tropical continent, about the middle of August.
moon; and at the boding sound of its elfin voice, when familia-
and strongly reiterated, the thoughtful, superstitious savage becomes sad and pensive.'

The same author states that in rainy and gloomy weather these birds remain silent in the hollow log which affords them and the bats a common roost and refuge by day. When discovered in this situation, they ruffle their feathers, open their enormous mouths, and utter a murmur, almost like theissing of a snake, to intimidate the in-
truder.
The eggs, two in number, are laid on the ground, in the woods generally; they are dark olive, sprinkled with darker specks, oval in shape, and rather large in size. If they or the young be handled, the parents remove them to another place.

by four small pillars. The axle of the cylinder, which is of steel, passes through that plate, and terminates about four inches above it. To this is attached horizontally, and immediately upon the plate, a thin arm of wood or metal about four feet long, and formed with what is called the feather of ten or twelve, so that the extremity of the arm is affixed to the object which is to be used in the expen-
ment, and a wire proceeding from the top of the steel axle to the extremity of the arm serves to prevent the later from bending by its weight.

A silk thread made fast at one end to the surface of the cylinder is in part wound round the latter; the line then passes over a pulley fixed in a vertical position at the opposite extremity of the machine, and to its lower end is attached some given weight: the descent of the weight causes the cylinder, and consequently the cylinder to move. Any one of these he could at pleasure dispose so that either its convex or plane surface might be resisted by the air: there was also provided a flat plate of lead equal in weight to the hemisphere employed, which could be fixed to the arm when the hemisphere was removed, for the purpose of ascertaining the resistance opposed by the air to the motion of the arm itself.

The radius of the circle described by each hemisphere in its revolution is measured from the axis of the cylinder to the centre of the sphere, of which the revolving object is the half, and the radius of the cylinder is measured from the same axis to the middle of the silk line passing round the surface: let the latter radius be represented by r, and the former, when any one of them is in the same line of motion, by R. The time is marked by a stop-watch at the end of each revolution, and the differences between them are taken for the times of the revolutions. After a few revolu-
tions the differences are very nearly constant; and a mean of ten or twelve of these, thus found, may be considered as the time of revolution, when the motion is uniform in consequence of the equality of the resis-
tance and inertia to the weight of the descending body: let this weight be represented by W.

In order to discover the resistance due to the inertia of the machine and the action of the air upon the arm: the plate of lead, with its plane in a horizontal position, being fixed at the end of the arm, different weights are attached to the silk line, till some one is found which causes the arm to rise by uniform motion. The weight thus employed may have been observed to revolve when its motion was uniform. This weight, which may be represented by w, is evidently the equivalent of that resistance and inertia; and the difference W - w is the value of the resistance against the spherical surface of the revolving hemisphere only. The velocity of the latter is measured by the length, in feet, of the arc described by its centre in one second, and the weight or resistance W - w is sup-
posed to be applied at the circumference of the cylinder to which the silk line is a tangent. This term must re-
sequently be multiplied by R, in order to reduce it to the value of that which would be equivalent to it if applied at the centre of the revolving object.

From a mean of numerous experiments with a hemis-
D. Hutton found that the resistance of the air
against the flat side was to the resistance against the convex side as 2:48 to 1: by theory it should be as 2 to 1 only. From experiments made with hemispheres of different magnitudes, also with a whole sphere, a cone, and a hollow cylinder, it was found that the resistance experienced by a circular sphere was nearly that on the plane surface, 10 feet to 20 feet per second) were nearly proportional to the surfaces, increasing a little above that proportion with the greater surfaces; and that the resistances on the same surface were, at a mean, with the square power of the velocity, gradually increasing with the increasing velocities. When a hemispherical or conical surface was acted on by the air, the resistance was less than that which was experienced by a plane surface of equal diameter; but the shape of the body was very much the same. When a free ball, which was round: the convex surface of a hemisphere, for example, experienced less resistance than that of a cone, contrary to the result of theory. The resistance on the base of a cone was to the resistance on the convex surface as 1:4 to 1:5. The resistance on the base of a short cylinder was less than that on the base of a cone, though the areas were equal; also, on account of the different manner in which air acts on the posterior surfaces, the base of a hemisphere experienced less resistance than that of a cone, and the convex surface of a hemisphere less than that of a whole sphere of equal diameter.

The whirling-machine invented by Ferguson is a frame or box of wood, containing a wheel about 2 feet diameter, on the upper surface of which a table is placed. Spallanzani has examined the axes of all are in vertical positions, and, by strings passing over the wheel and pulleys, the latter are made to revolve on turning the wheel by means of a handle. The machine was intended to exhibit, in a popular manner, the principal effects of the centrifugal force, when bodies revolve in the circumferences of circles.

On the axe of each pulley there is fixed, at its middle point, a bar of wood in a horizontal position, and on this a small plate or cylinder of lead made to slide easily along two horizontal wires, extending from the centre to the extremity of the bar: a silk line attached to this plate passes under a small brass pulley near the centre of the bar, and over a similar pulley fixed in a brass frame, about 6 inches from the pulley above, to whose axe the bar is fixed, is made to revolve by turning the handle on the axe of the wheel; then, on placing such a weight on the carriage in the brass frame as will just allow the former weight to reede in consequence of the centrifugal force, a considerable distance, the carriage requires by the revolution, the weight in the frame, including that of its carriage, is to be considered as the equivalent of the centrifugal force.

For example, let the two pulleys be of equal diameters, and let the axis of each be horizontal, a plate attached with a sliding plate or carriage; then if a weight of 6 ounces, including the carriage, be placed at 3 inches from the centre of motion on one bar, and 2 ounces, including the carriage, on the other bar, at 9 inches from its centre of motion, the forces will be equal, the centripetal and the centrifugal forces will cause any equal weights on the carriages in the two brass frames to rise to the tops of those frames at the same instant. Here the velocities of rotation are represented by 9 and 3, and the weights by 6 and 2, so that the ratio compounded on the velocities and masses is one of equality; and this is considered as verifying the proposition that if bodies revolve in circular arcs, the centrifugal forces are equal when the products of the mass of each body and the square of the radii are equal. By joining the extremity of one of the pulleys twice as great as that of the other, so that when the bars are placed on the axles and are made to revolve by turning the wheel, the angular velocity of one may be half the angular velocity of the other: then if any equal weights, for example, be fixed on the carriages which slide on the two bars, at equal distances from the centres of motion; and if there be placed on the carriages, in the brass frames above those centres, weights, including those of the carriages, such that the weight above the larger pulley may be one-fourth of that which is above the smaller pulley; the centrifugal forces arising from the revolutions will allow these weights to be raised at the same instant, proving that both the revolving bodies are retained in circular orbits. Here the angular velocities of the revolving bodies are as 1 to 2, and the weights in the frames, which represent the centrifugal forces, are as 1 to 4; and the experiment shows that when equal bodies revolve in equal circular orbits, the centrifugal or centripetal forces are to one another as the squares of the angular velocities.

It is easy to understand that such experiments may be varied so as to exhibit all the phenomena of circular movements.

WHIRLPOOL, a place in a river, or in the sea, where, in consequence of obstructions from banks, rocks, or islands, the water is agitated by a revolving motion.

The agitation of the waters which is constantly observed near Messina, and which is usually designated the whirlpool of Charybdis, is now well known to be unaccompanied by any effect oceanic. If such vortexes might be absorbed, and is, rather, an incessant undulation of the water. The agitation is said to exist in several different places at the same time, within the circumferences of circles whose diameters, when the wind is moderate, do not exceed 100 feet; and is caused by the wind acting with the rapid current which sets towards the faro, or lighthouse, from the north during six hours, and from the south during the next six hours, and so on alternately; the changes taking place respectively with the rising and setting of the sun. The wind was rowed on the coast, and when the wind was light, experienced no danger, though the boat was much tossed by the waves: he was informed however that when the wind is high, the swelling of the waves is more violent and extensive, so that small vessels which are driven within the circle of danger by the waves breaking over them, and large ones may be driven on the Italian shore, where they are sometimes wrecked.

The sagging of the waves on the coast of Cape Frowd produces a noise which is said to resemble the barking of dogs; it is probable that these sounds gave rise to the fable that a female monster surrounded by ferocious dogs and wolves lay in wait to devour the mariners who might be wrecked on the coast.

The Maelstrom between the islands of Mosker and Varae on the coast of Norway appears to be of a similar nature: the tide there forms a current which runs with violence alternately from north to south, and in a contrary direction by the wind; and it is said that the waves, which have been described as so considerable, as to have created an agitation of the water, the sound of which is heard at sea to the distance of many leagues. At high and low water, in moderate weather, ships pass through the strait without danger; but during strong gales they keep near the banks in order to get into the current, in consequence of which they might founder among the waves, or be otherwise destroyed.

Whirlpools are produced among the Orkney Islands by the actions of winds and currents: but boats, it is said, pass over the spots in safety, a log of wood or a bottle of straw previously thrown into the water being sufficient to arrest its revolving motion.

The circular or spiral motion of the water, which constitutes a whirlpool or eddy in a river, is produced by the rotation of the banks or contractions of the bed; in consequence of which the current is opposed: and the contracting portion of the river, in order to find its way towards the middle: the ripples of water between the eddy current and the bank by which the waters from the upper part of the river are reflected, are called by the French the ripples, or a curneau de rives, the river having made its way towards the middle; the particles of water between the eddy current and the bank by which the waters from the upper part of the river are reflected, are called by the French, the current, ripples, or a curneau de rives, the river having made its way towards the middle; the particles of water between the eddy current and the bank by which the waters from the upper part of the river are reflected, are called by the French, the current, ripples, or a curneau de rives, the river having made its way towards the middle;
the contracted section becomes, by the laws of hydrodynamics, greater than that of the river above A B. Then the particles of water within the space a C D, rushing towards a c, in consequence of the pressure of the water of the river above, and of the momentum impressed on them in the contraction, are made to move in a direction parallel to a c, besides the current in the direction a c; and by the action of the forces in these directions the revolving motion takes place. Whirlpools are continually being formed in this manner, and are carried to some distance down the river both above and below.

Whirlpools may in like manner be formed at the same time, below B, on the opposite bank of the river, if this should have a similar form to the bank between A and C; or the stream a c e may be reflected from E, should there be a bank at the right place and situation. In the enlargement beyond, as shown in the diagram. Precisely in like manner are formed the whirlpools or eddies at the shoulders of the piers of a bridge, when the breadth of the river is so much contracted as to cause its surface above the bridge to be considerably higher than the surface below.

Under these whirlpools the bed of the river must evidently sustain less pressure than takes place on the parts about them; consequently the water under the bed, acting horizontally, may lift up the earth and stones, and thus undermine the piers; or it may blow up the piles driven for the formation of dams. By this cause the accidents which occur in hydraulic operations are frequently produced.

Inequalities in the depth of the bed of a river must evidently give rise to vertical whirlpools by the refluxion of the water from the ascending slopes; the particles then take an oblique direction upwards, so as to rise like a wave above the general surface: also a sudden depression of the bed will produce a vertical whirlpool in the lower part, nearly as the horizontal whirlpools before mentioned are supposed to have been formed.

WHIRLWIND is a violent movement of the atmosphere in a spiral direction about an axis, the latter having at the same time, as is now generally believed, a progressive motion, rectilinear or curvilinear, on the surface of the land or sea.

The tornadoes of North America and the coasts of Africa, as well as some in the sea of Chinn, have long been known as violent tempests in which the wind has a revolving motion about certain axes; but these terms are commonly applied to such storms as are of short duration and comparatively of small extent, the diameters of the vortices varying from a few hundred yards to one or two miles. It is now ascertained, by such evidence as leaves scarcely any doubt of the fact, that in all or most of the great storms which agitate the atmosphere the wind has a rotatory movement, and that the diameter of the circle with which the wind revolves is, in extent to several hundred miles: in great whirlwinds the axis appears to be either vertical or nearly so, but in those of small extent its inclination is often incomconsiderable, and it is sometimes parallel to the horizon.

As early as the middle of the seventeenth century the revolving motion of the wind, during the great hurricanes which take place in the West Indies, appears to have been noticed; and in a description of them, which was given at that time in the Philosophical Transactions, it is stated, that, after a cessation of the trade-winds, the storm begins from the north; that the wind afterwards goes round to the north-west and then to the south, the storm subsiding when the wind comes to the south-east; and in Colonel Capper's work on the 'Winds and Monsoons,' which was published in 1691, the gyration nature of the storms in the East Indian seas is inferred from the recorded changes in the directions of the wind during the storms of 1720 and 1770. Whirlwind storms appear however to have been then considered as local and temporary; and we see so far Mr. Redfield, of New York, that the direction of their motion is progressive as well as revolving. Mr. Franklin ascertained that the storm which he witnessed at Philadelphia in 1743, took a certain time to arrive at Boston, but he did not pursue the subject, and, from a mistaken notion of the distance between those cities, his opinion of the rate of movement is now known to be erroneous.

Though the fact of a revolving motion of the air is great storms may now be supposed to be the more properly understood. It is, however, generally admitted that the cause of the rotation is still obscure. Dr. Hare, of the University of Pennsylvania, who considers the rotatory movement as accidental, suggests that electrical discharges between the earth and clouds may cause an enlargement of the atmosphere, and to an extirpation of heat and a precipitation of aqueous vapours: partial rarefactions are thus supposed to be produced in the upper part of the atmosphere, in consequence of which cireums of air ascend from the surface of the earth to the atmosphere. It is observed that, when a storm in the horizon to supply the deficiency at the spots from where the air ascended. The agency of electricity is frequently manifest in storms; but, whatever be the cause, currents of air are frequently, as at the changes of the monsoons in the East Indies, may bear a certain direction towards one another, and thus rotatory motions in the atmosphere may be produced, exactly as eddies or whirlpools are formed in currents of water. [WHIRLPOLL.]

Mr. Redfield, in his 'Observations on Storms,' in the 'Transactions of the American Philosophical Society,' 1841, offers an opinion that generally during a gale there is, in the lower part of the atmosphere, a spiral motion inclining downwards and towards the centre; and in the higher regions a like spiral motion inclining upwards and towards the exterior. At great distance, and at great height, there is sometimes found a considerable area within which the winds are moderate and blow in various directions. These characters of a revolving storm appear to have been given by the manner in which the movement was observed during the hurricane which occurred in New Brunswick in June, 1835; when, about the centre, bodies of great weight were carried spirally upwards, and, on opposite sides of the storm's path, the trees were thrown in contrary directions. It is observed that, when a storm moves violently, the doors and windows of houses are often forced outwards, either from the centrifugal force caused by the revolving motion, or from the expansion of the air within. When a temporary rarefaction takes place on the exterior, there may be a considerable lowering of the barometer; and if a storm, in passing over a place, is in activity at a considerable altitude before it descends to the earth's surface.

That a whirlwind may have a progressive as well as a revolving motion may be easily understood if it be observed that, as the atmosphere in the tropical regions moves from east to west with respect to the surface of the land or sea, it may, after crossing the Atlantic and Pacific oceans, be arrested in its progress westward by the continental masses of America and Asia; and, from these towards the poles of the earth, the whirlwinds, formed by electricity or otherwise in the general current of air, will consequently be carried with the deflected branches into high northern and southern latitudes; and, generally, it is observed that the path and point of the deflected forces, the path of the axis of a revolving storm in either branch is a curve line like a segment of a circle or parabola. Sir John Herschel, at the meeting of the British Association in 1853, suggested that the whirlwinds of the United States and the north of Europe, were formed by the nearly circular and curved curves assumed by the paths of the storms on the coast of North America: the paths nearly coincide with the course of this stream, and the warmth of the water, by increasing the temperature of the atmosphere, and maintaining the storms which have their origin in a lower latitude.

It is evident that the velocity of the wind in a revolving storm must be the greatest and the least respectively at that point which is perpendicular to the path of axis, or for one side the direction of the revolving current combines with that
of the progressive motion of the storm, and on the other it is contrary to it. In other parts within the limits of the storm the direction and velocity of the wind must be compounded of the rotative and progressive motions; and it will happen frequently that a temporary calm is experienced at each point on the earth's surface at which the axis of the storm successively arrives.

The phenomena of tropical storms are not precisely such as they would be if the air had a simple movement of rotation; the particles of air, while revolving, are probably subject to manducatory motions in spiral curves, and local obstructions cause sudden and irregular changes in the direction of the wind, so that it appears sometimes to shift to different points all round the compass. Mr. Redfield states that, in small whirlwinds, the axis of rotation appears at times to describe great circles in looped curves about its mean place in the line of progressive motion; and the like gyrations probably take place in those of an extensive kind; but in order to simplify the explanation of the phenomena of whirlwinds, it is usual to assume that the particles of air revolve in the circumference of circles whose centres are in the axis; the latter having at the same time a movement of progression in a rectilinear or curvilinear direction. Now, if the plane of the paper represent the surface of the sea, and a line through the centres perpendicular to it, represent the axis of a whirlwind whose north and south diameter is N.S., and in which the particles of air are supposed to revolve (for example) in the direction indicated by the order of the letters N.W.S.E.; the progressive movement of the axis being also supposed to be from A₁ through N., or from south to north; then, since at N. a tangent to the circle lies due east and west, it is evident that a ship which would experience a wind blowing from the east when the centre of the storm is at A₁; and if the ship remain stationary, the wind will continue to blow from the same quarter till A₁ arrives at N., the tangents to the concentric circles supposed to be described by the particles being due east and west at the northern points of the circumferences as they successively arrive at N., and the wind in all the northern half of the storm revolving in the direction E.N.W.; but after this time, the wind blowing in the direction W.S.E. must be felt at N., as soon as M₁ arrives at N., and the remaining half of the storm has passed over that point. In like manner, if the axis of the storm were to move from A₁ towards W., a ship supposed to be stationary at the lat. point would feel the gale from the north till A₁ arrives at N.; after which, as soon as the particle by which it was produced leaves that point, the ship would experience a wind from the south. Again, if the axis were to move from A₁ towards A₂, that is, from south-west to north-east, for example, the direction of the whirlwind being as before according to the order of the letters N.W.S.E. and the ship supposed to remain stationary at some point, as M₁, till the storm has passed over it; then, the line of direction in which the points of the whirlwind successively overtake the ship being M₁M₂, parallel to A₁A₂ as the arcs M₁M₂, B₁B₂, &c. will represent the several directions in which the wind will successively be felt at the ship during the continuance of the storm. Thus the axis of the whirlwind being at A₂, the convex surface of the storm has just reached the ship, and the wind blows in the direction B₁M₂, or in the circumference of the circle whose centre is A₂, that is, nearly from the east-south-east. Next, the axis being at A₃, the point M₃ in the circumference of the circle whose radius is A₃M₃, is at M₁; and then, at the ship the wind is felt in the direction B₃M₃, or in the circumference whose radius is A₃M₃, or its equal A₄M₄, that is, nearly from the north-east; the axis at A₄, the point M₄ in the circumference whose radius is A₄M₄, is at M₁; and then at the ship the wind is felt in the direction B₄M₄, or in the circumference whose radius is A₄M₄, or its equal A₅M₅, that is, from the north-east.

In the American Journal of Science, vol. xx., it is shown that the storm which took place in September, 1837, in the Indies, and was described by Mr. Redfield, in the United States, in lat. 35° N., at day-light, September 3rd, when the wind blew from E.S.E.; on the same day, at 11 a.m., the storm commenced at Cape Henlopen, with the wind in the same quarter, but it afterwards shifted to the south, and blew with great violence. At New York the storm commenced at 5 p.m. from the east and north-east, the wind blowing with fury for which presents the most remarkable phenomena which it has been more attentively observed than those of the storms in any part of the world. The valuable publications of Mr. Redfield contain nearly all the details which have yet been collected concerning them, while the work of Colonel Reid, entitled 'An Attempt to develop the Causes of Storms,' contains almost all that is known of the whirlwinds in the southern hemisphere.
of August, 1837. Details of the circumstances attending it have been given at length, with a chart of its course, by Col. Reid, in his work on storms; and it appears that it was first felt in lat. 17° 30' N., about 400 miles eastward of Antigua, though it may have had its origin still farther east.

By the effects experienced at different points on the ocean, Col. Reid concludes that the centre or axis of the storm advanced at first from east to west nearly; and after moving in that direction about two days, it turned towards the north. When the storm had been abruptly turned from the land; and when the whirlwind ceased to be noticed, it was passing eastward across the Atlantic to the south of Newfoundland. On the 18th of August, a ship, named the Key, was blown off on a bar in the same vicinity; at that time a hurricane, named the Calypso, above three degrees northward of the Rawlin's, was thrown on her beam ends with the wind successively at N.W., W., and S.W.; and a ship, named the Sophia, situated about as far north-east of the Rawlin's, evidently eastward of the storm's centre, experienced the hurricane from the E.N.E., E., and S.E.

Previously to the temporary calm, the wind at the place of the Rawlin's had been N.E. by E. and N., and afterwards it suddenly changed to W.S.W. These circumstances sufficiently indicate that the whirlwind had then a progressive motion towards the north-west, and at the same time a rotation in the direction of the points N.W., S., E. On the 20th of August the wind at the point occupied by the Sophia appeared to veer, first to the north-west, and subsequently to the north; and since at this time the progressive movement of the hurricane had changed from a south-west to a north-east direction, the veering of the wind admits of being explained on the supposition that the Storm had then veered into the western semicircle of the whirlwind, while the latter, still revolving in the same direction, passed over her.

That independent whirlwind sometimes intersects with each other, and may be inferred from the circumstances attending the voyage of the Castries from St. Lucia to England in the same year (1837). This ship, between the 14th and 25th of August, sailed nearly from south to north on the chord of the arc described by the centre of the great hurricane; it was found on the 14th in about the 16th degree of north latitude, where the wind usually blows from the east, she felt a gale, which at first came from S.S.W., and afterwards changed to S.E., as if she had crossed the eastern side of a storm revolving in the direction of east. She then veered, like others, in the direction N.W., from east to west: this was in fact the said hurricane near the place where it was first observed. The Castries then sailed northward with fair weather till August 24th, when, in the 17th, and in long, became again over-taken by a whirlwind which passed over her. Now this could not have been the great hurricane before mentioned, since at that time the latter had passed beyond the spot towards the N.E., and the rotation at its southern extremity described about three-quarters of the circumference of a circle in the order just mentioned.

Mr. Field, of New York, Professor Dove, of Berlin, and Colonel Reid, in England, independently of each other, and nearly at the same time, ascertained, from the accounts of persons who had navigated the southern hemisphere, that in the whirlwind storms of those regions the rotation of the ships in the same place, in the direction N.W., E., S.W., or contrary to that in which the rotations are made in the North Atlantic; the axis of the storm having also a progressive motion from the equator obliquely towards the south pole. Such appears to have been the nature of the storm near the island of Rodriguez, between 1837, in which the Blenheim, the flag-ship of Sir Thomas Troubridge, founded: for it is observed by Col. Reid, that the Harrier, brig of war (one of the squadron), by scudding before the wind from the 1st to the 4th of February, which is the 4th of Feb.

And since the ships first received the wind from the south-east, it may be inferred that, by sailing south-west faster than the storm advanced, they actually overtook it at its south-east side. A like circumstance occurred to the ship Neptune during its voyage from Calcutta to the Cape in 1835.

From a rough account of the hurricane which burst at the Mauritius in March, 1818, it appears that the wind began early in the morning to blow from S.S.E. and S.; but in about an hour it changed to the east; and at daybreak it became N.N.E. and N., and when the storm had ceased, these circumstances indicate a rotation in the order N., E., S., W., about an axis passing a little way to the north of the island, from near east to south-west.

But the most remarkable storm which Colonel Reid has investigated is that which occurred in the Indian ocean, in March, 1809, when the fleet, under the convoy of the Chiltern and Terpsichore, suffered severely. The fleet, homeward bound from India, had got in lat. 21° south, when, on March 14, the hurricane became so violent that the ships were dispersed. By tracing the courses which they pursued, and also those of four ships which had sailed from the Cape to cruise near the Mauritius, Colonel Reid found that the general movement of the storm from the East Indies to the South Atlantic, in which the wind veered at each of the ships whose courses have been examined is capable of being represented by assuming that the rotation was, as in the preceding case, according to it, of 12th to 18th of March, the whole fleet appears to have been near the southern extremity of the vortex, and to have sailed in a direction parallel to the path of the axis. Seven of the ships, by lying to and keeping the 15th, and not having a storm, as they had been, in the southern branch of the line described by the axis, and crossed the northern extremity of the vortex as if it had moved south-eastward.

The vessel of Lieutenant M. B., being part of the fleet, by sailing eastward got, on the 15th, nearly to the centre of the vortex in the northern branch; on the 15th and 16th, this ship scudded before the wind, but it afterwards changed its course to S.E., and on the 18th it got out of the storm. The ships which lay nearest the vortex in the southern branch, kept the wind; they thus kept near the centre of the storm, where they must have founded.

In November of the same year, a hurricane which commenced in lat. 55° south, in the 25th of December, and appears to have had little progressive motion; all the ships which were exposed to it experienced a temporary calm in the midst of the storm, and on the afternoon of one day, November 21, the wind veered rapidly round the horizon in the storm which, in 1838, was on the south coast of Ireland, and proceeded from thence along the west coast. W. H. I.
Scotland, had all the characters of a whirling wind. It is stated by Colonel Reid that on the 14th of February, while at Cape Clear, the wind blew from S.E.; off Oporto the gale was from S.W.; at the same time, at the bottom of the Bay of Biscay, it was felt from S. and S.W.; and at the Shetland Islands, from the 16th to the 20th of February, the wind was from S.S.W. at Cadiz between the 7th and 12th of February the wind blew from S.W. and W.; and on the 10th, off Lisbon, there were heavy gales from S.W. to W.N.W. All these circumstances create a storm revolving in the order N., W., S., E., while its centre is frequently increased when the concave walls bends in its length, or when it is smaller at one extremity than at the other.

When the place is in the form of a dome, the undulations of the air, which are produced by a sound emitted from the concave surface of the dome, are, by continual deflections from every part of the concave surface, transmitted to a point in the base diametrically opposite to that from whence the sound proceeded; and there converges and concentrated sound to cause the perception of a sound many times louder than that which was emitted.

The whispering gallery in Gloucester Cathedral, which is described in Birch's 'History of the Royal Society,' vol. 1, is a passage leading from the aisle to the opposite, behind the east window of the choir: it is three feet wide, and about six feet and a half high, its whole length is about 75 feet, and its form on the plan is half an irregular octagon: the walls and ceiling are of freestone, and the latter, which is unoccupied, if two persons are placed, one at each end, near either wall, and one converses with the other in the lowest whisper, the words are distinctly heard as if the persons were close together.

The whispering gallery in St. Paul's Cathedral, London, is that which surrounds the base in the concave surface of the interior dome: here a person speaking in a whisper near the surface of the vault is heard distinctly by a person who stands also near the surface, even if a diameter, persons in any other part not being able to hear the sound. The like effect is said to take place on the exterior of the same dome if the persons speaking and hearing are at the opposite extremities of a diameter; the sounds are distinctly heard on the surface. For an account of the ancient whispering-place called the 'Ear of Dionysius' see SYRACUSE.

WHISTON, WILLIAM, was the son of Josiah Whiston, rector of Norton, near Twycross, in Leicestershire, and was born at that place, December 9, 1697. The materials for his Life are mostly contained in his singular autobiography, published in 1749; and from these the account given in the 'Biographia Britannica' is mostly taken. These memoirs, like others of the same kind, are not to be read without being preceded by the exercise of the mind in which there was much of vanity combined with unsuspected integrity. There never was a writer of his own life who laid his weaknesses more plainly before the reader, unless it were Boswell. Whiston's work was written by him in the last year of his life, and employed his son largely as an amanuensis till the age of seventeen. He was then sent as a pupil to Mr. Antrobus at Tarmouth, whose daughter he afterwards married. At the age of nineteen he was entered at Clare Hall in Cambridge, where he applied himself to the study of mathematics and the Cartesian philosophy. He took his degree in Lent, 1689-90, was elected a fellow of his college in the following June, and received his B.A. in 1693. In 1694 his health obliged him to give up his studies, and he was made chaplain to Dr. More, Bishop of Norwich. In this year he became acquainted with Newton, whose 'Principia' he had already studied. In 1696 he published his first work, the celebrated 'Theoricae Planetarum Hæresis,' which has been through six editions. His fancies on this subject, particularly his management of the comet for the production of the deluge, are well known: there was a joke against it, which was not without foundation, namely, that he had covered the whole of his head with black paper, having the figure of drawing it off again. In 1698 he got the living of Lowestoft in Suffolk, and by his subsequent marriage vacated his fellowship: during his tenure of this prebend he performed his duties there with great zeal and success.

But his connection with the university was soon revived, for in 1701 Newton made him his deputy in the duties of the Lucasian chair, and in 1703 resigned the chair itself, and procured Whiston to be appointed in his stead. He resided at Cambridge. In 1702 he published an edition of Tacitus.
Euclid, which was several times reprinted. He had also some clerical duties, obtained the character of an eminent preacher, and was fairly in the road to higher preferment, when his theological studies, in which he was most assiduous, brought about a gradual change in his opinions, which enabled his becoming an avowed enemy of the rejection of infant baptism to his system. His views on the matter were much influenced by a conviction which he obtained that the Apostolical Constitutions & Conferences, Apos, were not only genuine books, but equal if not superior to the epistles, and that he would violate the book of the Apocrypha. The change of his opinions soon appeared in his sermons and in his writings, which came out with great rapidity and were very numerous. The list was too long to quote, but he is always referred to as "Biographia Britannica." Very different varieties of doctrine were common enough at that time in the Church of England; and, if not made too public, views which were called heresies were connived at.

The bishop of Ely (Dr. Patrick), even when Whiston had gone so far as to omit part of the Litanies, and had consequently been cited, contrived to break up the court before the promoter made his appearance; and subsequently contented himself with desiring Whiston not to do the duties of a lecturership which he held at Cambridge, presenting the salary should be kept. But Whiston, whose whole life was one uncompromising act of maintenance of his own opinions, and defiance of his opponents, immediately resigned both office and salary. It is not always that a person who is not afraid of established dogmas will without an attempt to throw odium even upon his most reasonable acts. To what an extent this can be carried may be seen in the following instance:—A young candidate for a fellowship at Clare Hall, Dr. Cheke, was in the habit of spending long hours in the majority of the fellows were hard drinkers (and it seems that he was pretty nearly right), took to drinking by way of recommending himself. As the election drew near, he thought himself mistaken, and therefore applied to Whiston for his vote, confessing that he had been dined through policy, and promising sobriety in future. Whiston indignantly refused the request, telling the young man that he had sacrificed his integrity to his preferment. To this the writer of the Life in the 'Biographia Britannica' applies the following passage:—"Dr. Cheke's character had been much praised;"

In October, 1710, the storm burst upon the heretic. The heads of houses, after several hearings, to which they would not allow Whiston to bring a single friend, banished him from the University, after the usual offer of leave to recant, *which he did not* towards them. Both proceedings, as being done by the heads without a public trial in the vice-chancellor's court, were highly irregular, if we may trust the opinions given in sundry of the same body, but the College and Chancery confirmed them. Whiston was now thrown upon the world, but he had a small patrimony, and with this, his writings, his public lectures, and the occasional liberality of those who admired his unfailing character, particularly the cost had made of his life, of his sin, and law, he never was in want. His trials however were not yet over, and the heads of them will show how difficult, then as now, it was to define and prosecute heresy in the Church of England. The lower house of convocation censured his writings in 1711, but the censure happened to get mislaid before it was brought to the queen. Whiston, nothing daunted, published his 'Primitive Christianity' in November, whereupon the lower house applied to the upper house, but without effect. Further steps were thought of, and the justice was applied to information on the extent of the powers of convocation:—four were of opinion that there was no power to cite a heretic, but the rest were the other way. Still the controversy went on, and in 1719 in London delayed Whiston of heresy before the Dean's court of St. Paul's. The commissary of this court would not assume jurisdiction, but referred the matter to the Dean of the Arches, who in his turn objected to hear it except as an appeal. The decision fell upon the Chancellor, who appointed a court of Delegates, which decided that the Dean of the Arches ought to have heard the case, but proceeded to treat it as an appeal made to themselves. Whiston was accordingly cited, and appeared, but not upon the subjects of the matter, and after declaring him in contempt. This sort of thing happened so often, that we cannot but suspect the courts liked in such cases to take advantage of some party being a few minutes behind his time, and to escape the discussion. The lay delegates subsequently declared they would not proceed without a court of adjuncts to determine what heresy was. One of the delegates (a judge) affirmed that he would not take heresy on his shoulders nor on his conscience, and another kept whispering Whiston's counsel (Sir Peter King, afterwards lord chancellor), to move for a prohibition. Finally, in the court of adjuncts the Chief Justice, Sir Robert Walpole, disapproved of the whole, and said he would not allow the court to proceed. Accordingly, the proceedings were delayed till 1715, when all heresy was pardoned by an act of grace; and neither excommunication nor degradation ever followed. Whiston declares that the court of delegation met about once during the whole five years; he handed about his 'Proposals for finding out the Longitude at Sea by Signals' at the door of the court, and on one occasion presented each of his judges with a sheet, wet from the press, which they supposed was a petition, but which, on being fully displayed, bore the following title:—'The Cause of the Deluge demonstrated.' During the remainder of his life Whiston had no serious annoyance for his opinions. He was preached against and refused the communion by the clergy. But it continued. John Sacheverell, but he was never adverse from controversy, and would have been anything but pleased if he had not excited attention. He was also refused admission into the Royal Society. According to his account, Sloane and Halley asked him to join their scientific society, thinking the reason of this could not have been disapprobation of Whiston's opinions, for even supposing that Newton was not himself an Arian (which is a disputed point), his most particular friend Dr. Clarke was one, and we can hardly imagine [sic] that Sloane or Halley would have done the following if they supposed that he would not become a member, or that the Royal Society the opinions of his own most intimate associate. Whiston states as follows:—"Now if the reader desire to know the reason of Sir Isaac Newton's unwillingness to have me a member, he must take notice that in his making up my first Delegates, he took a discretionary power, and left the place, brought to me to be a candidate; and as his recommendation of me to the heads of colleges in Cambridge, made me his successor: so did I enjoy a large portion of his favour for twenty years together. But he then professed to be sincerely convinced of his error, and his proceedings were disallowed. If he had, that is, learned of him without contradicting him when I differed in opinion from him, he could not, in his old age, bear such contradiction, and so he was afraid of me the thirteenth years of his life. This and other remarks upon Newton's character passed from his conception till a few years ago, when the disclosures made to Flamsteed [FLAMSTEED] obliged many persons to adopt a somewhat lessened estimate of the social character of Oliver Goldsmith (who had however the sense to keep all signs of his foible out of his writings): but shallow he was not, though his learning was not of the deepest character. It is hardly to be imagined that Newton would have made a shallow person his deputy, or after trial in that capacity, suppose that he could not have seen that a long list of writings without seeing a good portion of shredness mixed up with his vanity. 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was to be made to it." On another occasion (and this story does not come from Whiston himself, but from the 'Biographia Britannica,' in which the writer assures us it has it from undoubted authority), being in company with Pope, Addison, Walpole, Cranges, and others, they appealed to Whiston on the subject they were debating, namely, whether a bishop could not be excommunicated, and Whiston, without loss of his temper, replied thus: "I have been excommunicated, and I am lost." Whiston's reply may be imagined; on which Craggs said, 'It might do for a fortnight, but not longer.' To which Whiston replied: 'Mr. Secretary, did you ever try it for a fortnight? Craggs answered nothing, and Mr. Walpole said he could not answer. The story of telling Queen Caroline, at her request, one of her faults, talking during public worship, and refusing to tell another till she had amended that one, is well known. Such readiness to be excommunicated at all times, supposed, was invaluable to a person in Whiston's position.

There are various circumstances of Whiston's life which it is not necessary to do more than name: his formation of a religious society which met at his own house—his various publications, oral and printed—his multiharifious speculations on prophecy, particularly his decision that the Jews were to be restored and the millennium to commence in 1786; his speculations on finding the longitude, whether by attempting to moor fixed vessels in the sea (which he attempted in vain), by a clock invented by him, or by Jupiter's satellites, &c; his survey of the coasts of England by subscription, which produced a useful chart, &c. He died August 22, 1752, in London, at the age of eighty. A book has not yet allotted his efforts for the diffusion of his opinions, in which he forsook the subject, on account of his character for courageously consistent. He left several children, one of whom, John Whiston, made a fortune as a bookseller, and published many of his father's later works.

Whiston left, which appeared with a great deal of care, fifty-nine in number. Only one has lasted, the translation of Josephus, published in 1737. This book has been reprinted a great many times. The Puritans have always had a sect lined down from them, who made it a point to show that the English were never a divided people (in this sect subdivides into two, the second books of the subdivisions being Bunyan's 'Pilgrim's Progress' and Whiston's 'Josephus.' Of this translation the general opinion, as a translation, is favourable.

If what the Edinburgh Review asserts be correct, namely, that the recent discovery of Milton's Ariasianism has diminished the sale of 'Paradise Lost,' we may almost wonder that Whiston's 'Josephus' gained so firm a footing among sects of the most rigorous orthodoxy.

To what has been said of the character of Whiston, we may add that his spirit, though benevolent, was so strongly suspect, not much inclined to toleration. His ideas of ecclesiastical discipline and authority were so high, that we have heard him publish a statement to the effect of a church a bishop who had led his clergy the lives of slaves, and been far from showing towards heretics the in- disposition to prosecute which Hopper, Burnet, and others showed towards him. Almost his first act upon leaving Cambridge after his banishment was to set a parish priest upon making inquiries with reference to refusing the communion to a lady who was suspected of not being married to the man whose name she bore, though the matter was so mean, so vain, to regard less, and came to Whiston's knowledge as a matter at the house, to which it was ad- duced by his respectable friend Dr. Clarke. His perfect sim- plicity is displayed in his manner of telling this story ('Memoirs,' p. 183) and many others; as also in the otherwise quaint character of his epigrams, and in his letters to the per- sons of others. He seems not to have had the smallest idea of the proprieties of private intercourse; perhaps his incapability of concealing his own foibles belonged to a temperament which also prevented his seeing what he was doing with a clear eye. His reasoning was always perfectly clear, and his memory perfect; but his logic was weak. The supposed importance of what he had done or was to do, than to his own power as the doer of it. He does not hold him- self up as a great scholar, or divine, or mathematician. When Cotes, a very young man, was candidate for the Plumian professorship of mathematics in Cambridge, to which he was elected, the election was managed thus, according to Whiston: 'I was the only professor of mathematics directly concerned in the choice, so my determination naturally had its weight among the rest of the electors, and that I pretended myself to be not much inferior in mathematics to the other candidate's master, Dr. Harris, but confessed that I was but a child to Mr. Cotes: so the votes were unanimous for him.' Whiston seems to have been more vain of his sincerity than of anything else: and certainly the number is not small of those who would be much the better even of a double portion of his weaknesses, if they could there too be honest. His fearlessness, and honesty. To none more does this remark apply than to a certain dignified clergyman of his own day, whose writings were a disgrace to his profession, and who in a letter written between him and his correspondent, said the epigram 'wicked' to the subject of it, accompanied by expressions of contempt which the lowest of our day do not venture aloud in the street without first looking to see that no policeman is in hearing. What would have been the tone of the next common phrase, 'the decent part of society,' in the age in which Swift was allowed to cast a stone at Whiston?

WHITAKER, REV. JOHN, was born at Manchester about 1736, and studied at Oxford, where he took his de- gree of M.A. in 1758, and B.D. in 1767; he was Fellow of Corpus Christi College. In Rees's 'Register of Living Authors of Great Britain,' 8vo., Berlin, 1791, there is attributed to Whitaker a 'Survey of the Doctrine and Arguments of St. Peter's Epistle,' with a parenthetical notice of 'the Montgomery' ('Survey,' published in 1751; by this it is supposed Whitaker's first publication appears to have been the first volume, in 4to., of 'The History of Manchester,' which appeared in 1771, and which was followed by a second volume in 1773; the third appeared in 1834, in 2 vols. 8vo., in 1773. Meanwhile also he had published, in an 8vo. volume, in 1772, his 'Genuine History of the Britons asserted,' in answer to James Macpherson's 'Introduction to the History of Great Britain and Ireland,' which appeared in 1763, in 4to. and was accompanied by a preface, in 1764, by Whiston. It is said that Macpherson's 'Introduction,' It is supposed that the Macphersons nor Whitaker threw very much light upon the subject, and that the speculations of both have been superseded and made quite valueless by subsequent investigations.

In November, 1773, Whitaker was appointed morning preacher of Berkeley Chapel, London; but the person, Mr. Hughes, who had given him the situation, thinking proper to remove him in about two months after, Whitaker was removed from the last place he held. He was for a time a librarian of the Bodleian Library, and was also, Mr. Whitaker and Mr. Hughes, &c., in which, his bi- graphier in Chalmers (a personal acquaintance) tells us, 'he expressed himself so indirectly that his "Case" was considered as a libel by the Court of King's Bench.' This would seem to mean that the publication had been made the subject of an indictment or an action. Having soon after this given substantial proof of his scrupulous ortho- doxy by refusing a living in the church which was offered to him by a Unitarian patron, he remained with nothing but his fellowship till 1776, when he succeeded, on the presentation of his college, to the valuable rectory of Ruan-Langborne in Cornwall. Taking up his residence here, he became involved in a contest with his parishioners, whose understanding was quite different from his own, and feared the result would be to a greater extent than he had hitherto been under suspicion. He was an animated and impressive preacher, and in all respects an attentive and zealous clergyman. His principal publications after this were, an octavo volume of 'Remains upon Divine Judgments,' published in 1783; 'Mary Queen of Scots vindicated,' in 3 vols. 8vo., 1787, of which a second edition, much enlarged, appeared in 1788, in the same number of volumes, in 1790; Gibbon's 'His- tory of the Decline and Fall of the Roman Empire Re- searched,' 8vo., London, 1791; 'The Course of Hannibal over the...
Euclid, which was several times reprinted. He had also some clerical duties, obtained the character of an eminent preacher, and was highly esteemed in the road to higher preferment, when his theological studies, in which he was noted and distinguished, brought about a gradual change in his opinions, which ended in his becoming an Arian; he finally added the rejection of infant baptism to his system. His views on the matter were much influenced by a conviction which he obtained that the Apostolic Constitutions, Assemblies, were not only genuine books, but even if not superior in authority to any of the books of the New Testament. The change of his opinions soon appeared in his sermons and in his writings, which came out with great rapidity and were very numerous. He long for the 'Biographia Britannica,' the varieties of doctrine were common enough in the Church of England; and the views which were called hereesy.

The bishop of Ely (Dr. Patrick), even gone so far as to omit part of the doctrine of the Trinity, to the great life of his exposition; his sentiments must do the duties of a lestrship.

Thomas Dugdale, LL.D., the heir of Dr. William Dugdale, bishop of Salisbury, and one of the eminent clerical dignitaries of the reign of Edward IV.

He was in his younger years apprenticed to the profession of the law, but after the death of his father, in 1782, he contrived to buy the estate of Holme, in Yorkshire, and in 1791, he took the degree of L.L.D. in the University of Oxford. He was inducted to the archbishop of Canterbury, and in 1818, he was created a bishop in the Church of England.

In the year 1797, probably on his return from his travels in the continent, he took the degree of L.L.D. in the University of Oxford, and was inducted to the archbishop of Canterbury, and in 1818, he was created a bishop in the Church of England.

Though the public spirit of the times, and the sedition of the day, were against his views, the bishop of Ely, in his capacity as a bishop, was enabled to maintain his principles, and to continue his support of the doctrines of the Established Church, and to promote the welfare of the clergy and the people, by his influence and example.

Mr. Whitbread's publications consist of a number of single pieces, some of which are of the following antiquarian works:—A History of the Counties of Lancaster and York, 4to, 1806, reprinted, with additions and corrections, in 1806; History of the Deeney of Craven, 4to, 1818; account, in Latin, of the life and manners of the Romans in Britain, in the reign of Trajan, A.D. 200; The Lives of the Poets, 4to, 1812; The Visions of Poets Ploughman, 4to, 1810; a collection of the lives of the poets, from the earliest times to the present, with some remarks on the life of Mr. Dryden. The History of English Poetry, ii. 480-510; a collection of the lives of the poets, from the earliest times to the present, with some remarks on the life of Mr. Dryden. The History of the Poets, 4to, 1816; Loidia and Elmente, or a Panegyric of the brave and generous King of the Britons, in the reign of Edward the Confessor. The History of the Britons, 4to, 1816; Loidia and Elmente, or a Panegyric of the brave and generous King of the Britons, in the reign of Edward the Confessor. The History of the Poets, 4to, 1818; Loidia and Elmente, or a Panegyric of the brave and generous King of the Britons, in the reign of Edward the Confessor.

Mr. Whitbread's political career was the impeachment of Lord Melville, which he conducted. He was a warm advocate of popular education—a man of deep religious impressions. There was however nothing sectarian or bigoted in his religion, as may be inferred from the active part he took in the formation of the University of London, and his support of the Oxford Movement, and his opposition to the Catholic Emancipation Bill.
In 1833 an act was passed for better paving, cleansing, lighting, watching, and improving the town of Whitby; and an act for repairing and building of houses has been handed down in the above act. In 1833 an act was passed for making a railway from Whitby to Pickering, which is distant about 20 miles south by west. This railway was opened in May, 1836, for passengers and general traffic; it has only one track, and is worked by horses and two inclined planes. A branch railway goes to the freestone-quarries, which are about three miles from Whitby.

The population of Whitby, in 1821, was 8697; in 1831 it had fallen to 8248; and the number of houses was 1672. The population of Whitby, including the townships of Ruswarp, Hawsker, and Staithes, was, in 1831, 10,999; and in 1841 it was 9862.

Whitby is an ancient place; it seems to have arisen originally from the neighbourhood of an abbey founded by Oswy, king of Northumberland, in 867; but both abbey and town were utterly destroyed by the Danes, and lay in ruins till after the Norman conquest, when the town was rebuilt. It became a considerable fishing town, in which it stated continued several centuries. It did not rise in commercial importance till towards the end of the reign of Queen Elizabeth, when the working of the alumines in the neighbourhood was greatly extended, the harbour was improved, and ship-building was carried on. Alum was exported to France and other parts of the continent. During the late were numerous docks were in employ in ship-building and repairing, and manufactures of sailcloth, ropes, and other necessaries for shipping were carried on to a great extent. In 1819 twelve ships were employed in the whale-fisheries. The export of alum to the continent has since declined, and it is now sent chiefly to London and other British ports. The port has nearly if not entirely ceased to employ its ships in the whale-fisheries. The manufacture of sailcloth has diminished, and only three or four of the docks are now used. The foreign exports are considerable, that are timber, and hemp and flax from the Baltic. The chief sent coastwise is freestone from the quarries in the neighbourhood.

Whitby is still a very considerable seaport. There are only seven in England which exceed it in the number of registered ships (London, 2465 ships, 598,554 tons; Newcastle, 1143 ships, 229,571 tons; Liverpool, 1097 ships, 307,622 tons; Sunderland, 803 ships, 174,502 tons; Whitsone, 341 ships, 55,501 tons; Hull, 223 ships, 67,796 tons; and Yarmouth, 315 ships, 34,676 tons). According to a parliamentary return, dated March 23, 1842, the number of registered vessels above 50 tons was 291, the burthen of which was estimated at 47,507 tons; and, according to another return, the gross receipts for the year 1842 was £6654. 18s. 7d., 3914 14s. 10d. having been remitted to the receiver-general after payment of expenses.

(Continued from next page.)
necessary conditions of communion.' The book (which was anonymous, but the authorship of which appears to have been soon discovered) was immediately attacked with great fury from various quarters: the University of Oxford, in a congregation held on the 21st of July, condemned it; and the burn was put out by the marshal of the Schools Quadrangle; and at length Whitby, on the requisition of his diocesan and patron, Bishop Ward, signed on the 9th of October a strong expression of his sorrow and repentance for having 'through want of prudence and duty' caused 'error' to spread. Dr. Whet and Whitby published, and his distinct retraction of its two main principles—that it is not lawful for superiors to impose anything in the worship of God not antecedently necessary, and that the duty of not offending a weak brother is inconsistent with a man's right of deciding indifferent things—both of which he now professed to have discovered to be false, erroneous, and schismatical. The same year he also published a second part of the 'Protestant Reconciler,' earnestly pressing the Dissenting clergy to join in full communion with the Church of England, and answering all the objections of non-conformists against the lawfulness of their submission unto the rites and constitution of that church.

To publishing a Latin compendium of ethics, 'Ethics Compendium in usum academie juventutis,' 8vo., Oxon., 1694, returned to his old subject, the errors of popery, and published 'A Treatise in justification of the Latin Service in the Church of Rome,' 4to., Lon., 1697; a treatise in the Roman Calendar,' 4to., Lon., 1697; a treatise against the worship of images; 'A Demonstration that the Church of Rome and her Councils have erred,' 4to., Lon., 1688, on communion in one kind; and 'Treatise of Traditions,' Part I., 4to., Lon., 1689; Part II., 4to., Lon., 1690.

He next came forward in defence of the Revolution, in two tracts: the first entitled 'Considerations humbly offered for taking the Oath of Allegiance to King William and Queen Mary,' 4to., Lon., 1690; and the second, 'Historical Account of some things relating to the Nature of the English Government, &c.,' 4to., Lon., 1690. These were followed by 'A Discourse confirming the Truth and Certainty of the Christian Faith, from the Extraordinary Gifts of the Holy Ghost vouchsafed to the Church from the Year 1551; a treatise in Latin against Arianism and Socinianism,' 'Tractatus de Vera Christi DEITIS,' 4to., Ox., 1691; and 'A Discourse of the Love of God,' 8vo., Lon., 1697.

In 1703 appeared, in two volumes folio, his principal work, 'The Peace and Concord of the Church and State,' 8vo. This has been often reprinted, and is still held in much esteem by the adherents of the Armenian system of doctrine. The best edition is that of 1706, in 2 vols. fol.; and that was reprinted so recently as 1825, in one volume, royal 4to. In connection with it afterward published 'A Discourse of the Necessity and Usefulness of the Christian Revelation, by reason of the Corruptions of the Principles of Natural Religion among Jews and Heathens,' 8vo., Lon., 1697; 'An Account of the Opinions of Mr. Dodwell, &c.,' 8vo., Lond., 1707; 'A Discourse concerning the True Import of the words Election and Reproduction,' 8vo., Lond., 1710 (commonly called 'Whitby on the Five Points,' and often reprinted; the best edition is that of 1723); there was one of so late a date as 1817; 'Four Discourses' (on Election and Reproduction), 8vo., Lond., 1710; a treatise against the doctrine of Original Sin in Latin, 'Tractatus de Imputatione Divina Possess Adami Posteris ejus, &c.,' 8vo., Lond., 1711. While he was editing a Catholic university having been all of that persuasion; and, as he states himself in a preface to one of the above tracts, his own investigations and reflections had gradually brought him to a different opinion.

But his views afterwards underwent a still further change. Dr. Clarke's 'Scripture Doctrine of the Trinity,' which appeared in 1712, made him a convert to Arianism, and he afterwards published the following tracts in defence of this doctrine: 'Disquisition de Animae Predestinatione' (against the authority of the Fathers in the controversies about the Trinity), 8vo., 1714; 'A Discourse showing the Expositions which the Ante-Nicene Fathers have given are more agreeable to the Interpretation of the New Testament,' &c., 8vo., Lond., 1714; 'A True Account and Confutation of the Doctrine of the Religions,' 8vo., Lond., 1616; and a dissertation in Latin, on the difficulties which attend the study of the doctrine of the Trinity, under the title of 'Disquisition Modestae in Bulli Defensionem Fidelis Nienae,' 8vo., 1723. This last tract involved him in a controversy with the great Trinitarian champion, Dr. Waterland. Whitby defended himself in two additional pamphlets, published this same year, and retained his Arian principles to the end of his life, as appears from his posthumous work entitled 'Terpea foedera,' or the Last Confutation, containing several passages in his Commentary of the New Testament; to which are added Five Discourses, published by his express order; 8vo., Lond., 1728.

Meanwhile he had published another tract on the Romish Pope, 'Dei Panarum Necessum; the Discription of the Breaden God, &c.,' 8vo., Lond., 1716; and he also took part in the Bangestine controversy, by two pamphlets in defence of Bishop Hobson, to which he added, 'A Letter to the Bishop of Bangor,' 8vo., Lond., 1717; the second, 'A Defence of the Propositions contained in the Lord Bishop of Bangor's Sermon,' 8vo., Lond., 1718.

To this long list are still to be added six single sermons and a Dissertation, all different times. 'Thirty-three Sermons upon the Attributes of God,' 2 vols. 8vo., Lond., 1710; 'Sermons on Several Occasions,' 8vo., Lond., 1720; 'Twelve Sermons preached at the Cathedral Church of Stram,' 8vo., Lond., 1728; besides an anonymous work, 'An Account of the Reviews, and the True Meaning of the Reviews,' 8vo., Lond., 1711—a severe attack on Bishop Beveridge—of which he is supposed to be the author.

WHITCHURCH. [Hampshire.]

WHITCHURCH. [Shropshire.]

WHIT-BEAM TREE. [Lancashire.]

WHITE CANONS. [PREMONSTRATENSIAN ORDER.]

WHITE LAKE, or BIELOE OZERO. [RUSIAN EMPIRE.]

WHITE LEAD. [Lead, p. 370.]

WHITE MOUNTAINS. [NEW HAMPSHIRE.]

WHITE RIVER. [Mississippi River.]

WHITE SEA, a large gulf of the Arctic Ocean, which enters deeply into the northern parts of European Russia, and is situated between the 64th and 68th degree of latitude. The surface of the sea, on account of the number of large islands, is more extensive than any of the open seas, and nearly the shape of a semicircle, whose opening is directed towards the north-west, and which is separated from the open sea by a large peninsula, which takes its orient name from the town of Naryn, on the north shore. The entrance to the White Sea is between Kamsa Nosa, on the peninsula, or rather island, of Komanska Zemlia, which lies to the east, and Swatska Zemlia, a projecting cape of the peninsula of Kolva. These two places are about 250 miles distant from each other, and the innermost part of the sea is gradually grows narrower, and where it turns to the south-west it is hardly more than 40 miles wide. That portion of it which lies east and west is nearly twice as wide, and extends towards the south into two large gulfs, the Dwina, or Gulf of the Dwina, and the Onega, or Gulf of the Onega; both bays have received their names from the rivers which fall into their most south-eastern recesses. West of the Onega Gube the White Sea terminates, which is about 250 miles long, but has only a mean width of 25 miles and less to the north-west. It is called Kandalakska Guba, or the Gulf of Kandalaksha, from a small place of that name which lies near its innermost recess. The area of this sea is said to be something more than 20,000 square miles. The White Sea is so far favourable to navigation, that it has a considerable depth of water, and yet within soundings, with the exception of a sandbank which lies before the mouth of the Dwina, and occupies the greatest part of the Dwina Gube, and lies entirely within the eastern shore within about a mile, and remains about three miles distant from the southern shore. Large vessels therefore must keep near the shore, which is generally rocky and of moderate height, but may be safely approached as far as the depth is seldom less than 3 fathoms; and lies soon after the entrance of the river Dwina, which at low-water has only 12½ feet of water, and at high-water from 14 to 15 feet; at spring-tides it rises to 17 feet. But the sea is frequently covered with ice, which are thick at times from the shore, but much less so as one approaches.
which circumstance renders them less dangerous to shipping. The navigation generally lasts six months, as the ice in the Dvina begins to appear at the end of October, and before the beginning of May the river cannot safely be entered by vessels. Some account of the trade of this sea is found under Amsterdam, vol. iii., p. 2377.

Fish is more abundant in the White Sea than in any of the closed seas of Europe. Seals are very frequently met with on the shores. The white fish, as it is called by the whalers of Spitzbergen, or the beluga, is of very small size, and great value. In a barrel of salable oil, and is met with in large shoals. Cod is taken in great quantities along the coasts of the peninsula of Kol. Herring are as numerous along the coast of Nor- way as in the Baltic. The diseases is a chief concomitant of the summer, the small lakes along the coast, and is much esteemed for its flavour. It appears that the White Sea is the most western part of the Arctic Ocean where this fish is found. Other kinds of fish which abound are the Gadar mandulans, Gadus callarias, and the flat fish which is called Pleronecestes glacialis. But the fishery carried on by the population on the shores of the White Sea is not limited to that sea. From Archangel, Messen, and Onega many vessels are annually sent out to fish in Spitsbergen and Nova Zembla, where they take whales, the nar- whal, the Physter mareocephalis, or white whale, seals, and the walrus. The walrus is called in the Russian language morph, from the English morse is derived, as the teeth which formed the points of the animal were first brought from England to the White Sea.

The whole eastern coast of America, from the mouth of the St. Lawrence river to the Strait of Magalufons, had been explored before the existence of Europe. It was known to the seafarings of Europe. It appears that before 1553 the farthest point known in these parts was Vardeheus in Norway. In that year however Richard Chancellor, with his ship belonging to the squam- beri, making a voyage to the northward, discovered a northern passage to Nyiarvalen, and, been from the north-east passage to Catala, or China, arrived at St. Nikolaus, not far from the present town of Arch- angel, and by this voyage, and the negotiations which followed, it was opened to English commerce, and with Archangel. Towards the end of the century it became a steady port, and the vessels employed were more numerous, which allows the English to have over sea-faring nations had been taken from them, and their profits were greatly reduced. After the foundation of St. Petersburg the commerce of Russia was diverted from the White Sea to the Baltic. And this loss was a short time completely effectuated by the energetic measures of Peter the Great. During the whole of the last century the commerce of Archangel was a languishing state, so that between 1751 and 1763 not more than 40 vessels on an average visited the port of the capital. It had diminished to a third, and in 1763 had annually amounted to 150. The empress Cath- erine II. did little to raise it, but Paul I. and Alexander took off the restrictions under which Peter had laid its commerce, and since the beginning of this century it has continued to increase rapidly.

(Lütke's Reise durch das Nördl. Eimmer; Storel's Geschichte des Russischen Handels.)

WHITE SWELLING, a disease of the joints, so called on account of the inflammation which affects the skin. Under this term are included nearly all those diseases of the joints which are the result of chronic inflammation in the bones, cartilages, or membranes constituting the joint. These inflammations are constantly attended with swelling, which is caused by the pressure of the fingers, and thus leading to the impression that the bone is swollen and diseased; or it may be elastic, and yielding to pressure; or so soft as to produce the impression of the presence of fluid. Sometimes these swellings are attended with no pain, at other times pain is one of the earliest symptoms, and is constantly increased by the motion of the limb. In some cases the motions of the joint are but little impeded, while in others they are entirely destroyed. These general symptoms however admit of distinction, and seve- ral forms of white swelling, which can be traced to the joint as their seat. Amongst older writers these diseases have been described under the names of spina ventosa, fungus articulari, lymphatic tumor, and other names. A common division of the pain is derived from the felt fluid into the joint, and is less serousious, according as they were supposed to have their origin in a chronic or serousious state of the system. The more active were referred to the former and the chronic to the latter. Many other distinctions are founded more upon the age, temperament, and constitution of the patient, than upon essential differences of the disease. The following are the diseases of the joints which are generally denominated white swellings.

1. Inflammation of the Synovial Membrane.—This disease may be either acute or chronic. When acute, the skin is generally red, and the joint very painful and tender. It commences with pain at one particular spot, and in a day or two after, swelling takes place. The swelling may be felt at first to undulate, from the effusion of fluid into the synovial membrane; but the symptoms lessen from advances, from the thickening of the membranes and also from the effusion of lymph. The swelling always assumes the form and direction of the synovial membranes. In a chronic case, the pain begins at one point or assumes the chronic form. When the inflammation is acute from the beginning, the pain and tenderness are much less, so that the patient is able to walk about without much difficulty. There is little or no fever, the skin retains its general colour, the joint shows no swelling, the synovial membranes and the seat of the articular surface of the joint are not altered, and from the effusion of fluid into the joint, the fluids are rendered worse by exposure to cold and exertion. In these cases, although the swollen fluid may at length become absorbed, the synovial membrane remains thickened, and swelling and stiffness of the joint are the consequence, constituting a very chronic form of white swelling. The causes of this disease are both constitutional and local. It may arise as an effect of phlebitis, gout, rheumatism, syphilis, or mercury; or it may be produced by sprains, contusions, wounds, dislocations, or frac- tures of the heads of bones.

The treatment of this disease must vary according as it is acute or chronic, or dependent on local or constitutional causes. In the acute and local form of the disease perfect quiet of the patient, and the part should be covered with a dressing and leeches to the part should be had recourse to, with some purgatives and diaphoretics. When the skin is tense, fomentations and poultice may be used; but where not, cold lotions will be best. In the early stage of the chronic form leeches and cold lotions to the part, may be applied and perfect quietude enjoined. In the latter stages counter- irritants may be used, such as blister, the savine cerae, ointment of tartarised antimony, &c. When persons are well enough to move about, the joint should be kept from movement by strapping it with soap-platter, or covering it with a bandage or a cap of leather or other material made to fit tight. For the removal of the stiffness, cham- pooning, the vapour-bath, or friction with the hand, may be employed. When the inflammation arises from rheumatism or syphilis, the treatment should be the same as for those diseases.

2. Pulpous Thickening of the Synovial Membrane.—This disease generally occurs in young persons between the age of sixteen and fifty, and is apt to affect the knee-joint. There is not much pain in the joint, but swelling and rigidity come on slowly. The joint on being touched appears to have fluid in it. This disease goes on sometimes for years, till at last it destroys the joint; and unless the limb is amputated, the synovial membrane can never be removed. The disease consists in a total disorganization of the synovial membrane, which is converted into a brownish or lightish brown pulpous substance, varying from a quarter of an inch to half an inch in thickness. In its advanced stages the cartilages, bone, and ligaments of the joint become implicated in the disease.

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The well-marked cases of this disease must be looked upon as incurable, and only amputation will give a chance of relief. A systolic and subclavian pulse is the only sign of the disease to offer success is perfect quietude of the joint, which may be secured by pasteboard or other splints, or by soap-plaster. The general health should be attended to, and local applications made according to the symptoms. Inflammation should be subdued by leeches, and gentle counter-irritants may be kept constantly applied.

3. Ulceration of the Cartilages.—This disease occurs chiefly in children or adults under the middle age. It is frequently a consequence of the preceding diseases, but often aseptic, although involving the whole joint. The joint in which it is most frequently seen is the hip, producing the greater amount of the diseases known by the name of hip-joint disease. When it occurs in the knee, it is called by the inflammation of the synovial membrane by the pain at the commencement of the disease being slight, and its going on in increasing intensity. The pain is also present sometimes four or five weeks before any swelling is perceived. The swelling, when it occurs, is generally found on the calf of the limb outside of the joint, and often appears much larger than it really is, from the previous wasting of the leg from want of use. In many cases an effusion takes place into the synovial membrane and increases the swelling. In the process the disease affects both synovial concretions and synovial membrane and the surrounding membrane. As the cartilaginous tissue is renewed with difficulty, the most favourable termination of this disease is generally attended with ankylosis of the joint. When the disease affects a joint which moves the limb affects the diseased cartilage. The limb may be placed in splints, or bandaged up with soap-plaster, or perfect quietude of the joint may be secured by a plaster of Paris. The advantage of being employed to make applications to the part affected. Where the joint is hot, cold lotions and leeches may be applied; but where it is cool, counter-irritants, blisters, issues, moxas, antimonial ointment, or croton oil may be employed. For the swelling and rigidity which so constantly remain, relief may be sought in the douche, fomenting, or friction with the hand.

4. Scrofulous Disease of the Joints, beginning in the Bones. — Hall, at his death, was ambitious to involve the bones, and this on account of the apparent enlargement of the bones of the affected joint. That this is not the case, the existence of the above forms of disease proves, but even the fact on which the supposition was founded in the scrofulous cases. So far from the bones being enlarged in these cases, there are only a very few on record in which dissection has shown the bones to be enlarged. The bones have been supposed to be swollen from the hardness of the bone and its size: but the former arises from the softness of the bone, and the latter will be greater by contrast with the wasting diseased limb. But the bones are subject to disease which begins in their cancellous texture. The phosphate of lime is removed from them, or deposited in less quantity, and a yellow caseous substance is secreted in its place. The heads of the bones are altogether weakened and softened, and deposits of bony matter of an irregular form are found on their outside. Whilst this change is going on the bone becomes pain; then swelling; and it most commonly attacks, swells; the motions of the joint are affected, and it becomes more or less contracted, so as to prevent it being straightened. In the course of time matter is formed in the cavity, and makes its way outward, forming a swelling through the abscess forms on the outside of the joint. Sometimes sinuses occur, and run to a considerable extent from the joint under the fascia, or between it and the skin.

The condition of a limb is generally connected with a scrofulous constitution; and the scrofulous disposition, the more difficult will the disease be to treat. However, whatever may be the state of the constitution, this must be attended to primarily in the treatment of these cases. Under the general principles of which such cases should be treated. The local treatment must be the same for other cases of white swelling. Quietude of the joint should be secured on some of the plans previously proposed, and as there is a constant tendency to ankylosis, care should be taken if possible that the ankylosis occurs in a position most suitable for the use of the limb. Counter-irritants will be found of great utility in these cases, such as blisters, antimonial ointment, and croton oil. Care however must be taken that they are not employed whilst there is a tendency to inflammatory action; and, on the other hand, the means that are employed, such as leeches, cold lotions, &c., for an increased activity of the part, should be immediately abandoned when that activity ceases. When the morbid process has been arrested, fomenting, friction, and pouring water on the part from a height should be the only means of treatment for a short period: for the purpose of strengthening it. The abscesses which form in these cases should be opened early; if left to themselves, they often leave ulcerations which are difficult to heal.

(From Cooper's Practice of Surgery; Surgical Dictionary; Brodie, Pathological and Surgical Observations on Diseases of the Joints.)

WHITE THORN, or HAWTHORN. [Crataegus.] WHITE, ROBERT, an English line and mezzotint engraver, born in London, about the middle of the 17th century, He learnt drawing and etching of David Loggan, for whom he drew and engraved many buildings. He has engraved a large collection of English portraits, many of which were drawn by himself from the life in lead-pencil upon vellum. He drew also several interpretations of the heads, leaving little for posterity to be seen in engraved in Sandrart's 'Deutsche Academie,' &c. Sir Godfrey painted White's portrait in return.

While engraved the first Oxford Almanac in 1674. He was busily employed for forty years, and he had amassed about £5,000. He was not educated. He had indigent at last: in 1704 a plague sufferer, it is the Poulter, who purchased his plates, made a fortune in a short time. Walpole has given a list of about two hundred and eighty of his plates, in which he has placed the following observation: 'As the man exceeded Robert White in the multiplicity of English heads, it may be difficult to give a complete catalogue of them.' Yet as my author (Vertue) had formed a long list, it would be the best service curators if I refused to transcribe it.'

GEORGE WHITE, the son of Robert White, was also a clever mezzotint engraver and a painter. He was instructed by his father, and he completed some plates left unfinished by his father. He continued the mezzotint, and the following heads in this style are very good:—the Duke of Ormond, Lord Clarendon, Sylvester Petyt, Sir Richard Blackmore, Colonel Blood, who stole the crown, and the notorious Jack Sheppard, after Sr C. pressed, and painted by John Smibert. (Catalogue of Engravers, Strutt, Dictionary of Engravers.)

WHITE, GILBERT, known as the author of the Natural History of Selborne, was born at Selborne on the 8th of July, 1720. He was of the family of the Basingstoke, under the Rev. Thomas Warton, father of the poet of that name. On leaving Basingstoke he was admitted a student of Oriel College, Oxford, and took his Bachelor of Arts degree in 1743. He was elected a Fellow of the same college in 1744, and was made a Master of Arts in 1747 and was made a senior proctor of the University in 1752. He exhibited when young an attachment to literature and the study of natural history, and it was to periodical in these studies that he devoted himself from his earliest years. He had a particular interest in the natural history of his native village. Here he lived surrounded by his friends, engaged by his favourite pursuits during the whole of his life: he died on the 26th of June, 1733. Although he had frequently offered of preferment in the church, he declined the offer; and it was not before he had passed through the usual course of the clerical profession; for during the latter part of his life he acted in the capacity of curate at Selborne, and had previously performed the same duties in the adjoining parish of Farnham. The work on which the reputation of White was decided rests on his claim for him a conspicuous position amongst the cultivators of science, as well as the classical writers of Great Britain, in his Natural History of Selborne. This work was first published in quarto, in 1798, four years previous to the death of that author. In it he expressed a chapter on the antiquities of Selborne, a part of the work which has not been often republished with the numerous editions of the Natural History. After the death of Gil-
bert White, Dr. Aikin published a work entitled 'A Naturalist’s Calendar, with Observations in various branches of Natural History,' the whole work being selected from a natural history journal which had been kept by White for twenty-five years. In 1802 the ‘Calendar’ and ‘Natural History’ were published together in two volumes, octavo. In 1813 the ‘Antiquities, ‘Natural History,’ ‘Calendar,’ and some poems of the author’s were published together in one volume, 8vo. In 1826, these works appeared, edited by the Rev. John Mitford, Sir William Jardine, Captain Brown, and other editors. One of the best of the later editions was by the late Edward Turner Bennett, secretary to the Zoological Society, who, under the encouragement of both Dr. White and the Naturalist’s Calendar, and which is enriched with copious notes by the editor, and by Messrs. Bell, Owen, Yarrell, Daniell, Remire, Herbert, and others. The last edition of the Naturalist’s Calendar, 1843, has been published in small 8vo.

The portions of White’s writings devoted to natural history are written in an elegant and pleasing style, and give to the reader something of the enthusiasm of the writer. No one can fail wishing to participate in the quiet pursuits of the author in his rural solitude, after reading his letters, and they have much contributed to spread a taste for natural history in this country. But his letters and essays on subjects of natural history are not mere descriptions, but contain a large amount of original observation which has contributed much to a knowledge of the forms, habits, and instincts of the animals that inhabit Great Britain.

White was peculiarly fortunate in belonging to a family of ancient privilege and wealth. His grandfather was a wealthy family man, and with whom he was in constant correspondence. Four of his brothers are referred to in his letters, and some of them are well known for their literary labours. Most of his brothers and sisters were married, but he died single. He was too much occupied to give much interest to the families of his near relatives, and carefully noted down in his diary the births of his nephews and nieces, who, at the time of his death, amounted to the number of sixty-three. (Preface to Bennett’s edition of White’s Selborne.)

WHITE, REV. JOSEPH, was the son of a poor journeyman weaver of Gloucester, where he was born in 1746. His father brought him up to his own trade, but sent him for a time to school. In 1777, White’s Bampton Sermon was reprinted, and whatever it amounted to, had the effect of inspiring him with a love of reading and study, which he carried so far in his leisure hours, that his attainments at length attracted the notice of a neighbouring gentleman of fortune, who furnished him with the encouragement of a pension. In 1780, White had been taken to London, where he kept; the shell of the animal was carefully preserved in the family, and on being examined by Mr. Bennett, he was found to be the owner of a hitherto undescribed species, and has accordingly named it Testudo Helena.

To Bennett’s edition of White’s Selborne.
thinker; and, though he looked wild and weak, he was actually a man of extreme acuteness. But the slovenly habits which altered his appearance sunk into the texture of his character, and deformed the whole construction. Parr, it may be added, who in one letter characterizes him as uniting to the darkest management the clumsiest execution, always believed that his own and Badeck's were not the only pens he had laid under contribution; his notion was, that another of White's friends, Dr. John Parsons, afterwards the bishop of Coldham, was an auxilium whenever any man or woman, engaged in the preparation of the Bampton Lectures from beginning to end, thought 'without being let into the secret of other persons being also employed.'

We're calculation as to preformation was not disapproved by the new bishop. White was soon after promoted by the crown to a canonry of Christ Church; besides which, having, in 1700, vacated his fellowship by marriage, he was presented by his college to the living of Melton in Suffolk. His subsequent publications were well known. Distant in time from a Latin text, with a Latin translation of Abdallah's Description of Egypt, 1700, 1701; a critical edition of the Greek New Testament, publishing the alterations proposed by Griesbach in the common text, 2 vols. 1700, 1702; and a sequel to this, in 1700, edition of the only one of the synoptic Gospel texts translated by Griesbach, Crisena-Griechischen in Novum Testamentum Synopsis, which appeared in 1701. He died at his residence in Christ Church, 22nd May, 1716.

HEBEY KIRKE, was a native of Nottingham, where he was born 21st March, 1785. He was the son of John White, a butcher of that place, and of his wife Mary, whose maiden name was Neville, and who belonged to a respectable Staffordshire family. He early showed a preference for reading, and had lived long enough to try his hand at composition in prose when he was about seven years old. His first attempts in verse appear to have been of considerable later date; the earliest that is given or mentioned by his biographer is a short poem stated to have been 'written at the age of thirteen.'

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In addition to his Latin and arithmetic, acquired an acquaintance with the French language; but up to this time it continued to be the intention of his father to breed him up to his own business, and one whole day in every week, and his leisure hours on other days were employed in carrying the butcher's board. At last his mother, who appears to have been a woman of some education, as well as of a superior cast of mind, and who had now, in conjunction with her eldest daughter, opened a girls' boarding and day-school, which proved a profitable and satisfactory enterprise to the profits of this plan; and at the age of fourteen Henry, being taken from school, was placed in a stocking-loom, that he might learn the hosiery business. But this proved scarcely more satisfactory or original in its nature; he found it impossible to give his heart, his head, or even his hand with any effect to his employment; and after a year his mother found means to have him placed in the office of Messrs. Cobham and Enfield, attorneys and town-clerks of Nottingham. To make up for the want of a premium, he was engaged to serve two years before the commencement of his apprenticeship, so that he was not articled till the beginning of the year 1802. By this time he had acquired a tolerable knowledge of Latin with very little instruction, and his mother's wish was to improve him. To this purpose he added Italian, Spanish, and Portuguese; chemistry, astronomy, and electricity also engaged his attention; drawing was another of his pursuits; and he played very pleasantly on the pianoforte. He showed likewise a turn for practical mechanics. All this was however occupied by the law, 'to which,' says his biographer, 'his papers show he had applied himself with such industry as to make it wonderful that he could have found time to write as he had done, as his days were anything else.'

By his fifteenth year he had already begun to acquire distinction as a speaker in a literary society in Nottingham, and as a correspondent of various periodical publications, the 'Monthly Preceptor, or Juvenile Library,' the 'Monthly Magazine,' the 'Monthly National,' the 'Monthly Visiter,' and the 'Monthly Mirror.'

The encouragement of the late Mr. Thomas Hill, the proprietor of the last-mentioned work, and of Mr. Capel Lofft, induced him, about the close of the year 1802, to prepare a volume of poems for the press. It does not appear to have been published however till the end of the next year, or the beginning of 1804, when it came out, dedicated, by permision, to the publisher; but her grace after giving her name, forgot to give anything else, or even to notice the poems or their author; and the volume, which was harshly treated by the reviewers, appears to have attracted little of the public attention. It was the best I have ever written; it was mainly written for my dear friend, Mr. Southey, to whom he is principally indebted for the preservation of his memory and the general interest that is still felt about him.

Before his first volume of poetry was published, a great change had been wrought in his opinions, and his whole intellectual being, by his conversion from an indifference to religion and a tendency towards infidelity, to a deep and passionate conviction of the truth of Christianity. What appears to have been most operative in drawing his mind and heart into this new exalted was the circumstance of a young friend, who had been some time before suddenly struck in the same way, being about to proceed to the University, a destination which White had often looked to him. Soon after this, and himself about to enter the University was not; but we are told that, by Mr. Simeon's advice, he read for a year with the Rev. Mr. Granger, of Winteringham in Lindsey, where he studied very hard, and made great progress, during the first term one of the students who had been vacated, for which he was advised to offer himself as a candidate. He passed the whole term in preparing for this object; but his strength and spirits sunk under his exertions, and he was unable to pass the day examination, and was compelled to decline being examined. He had now only a fortnight to prepare for the general college examination: he was, in his exhausted and desponding condition he would have declined that too; but he was prevailed upon to come forward, and was presented the first magister with a very clear hope. He now bent his whole soul to finding the means of following his friend to Cambridge, and getting himself educated for the church. For some time the prospect was very discouraging; but at last the matter was managed, his principal friends wrote to the bishop of Lincoln, which whom he had been recommended, and who procured him a sizarship at St. John's, with additional pecuniary assistance. He quitted his employers, who very kindly gave their consent to this arrangement, in October, 1804. Mr. Southey's memoir is deficient in date, and himself he entered the University is not given; but we are told that, by Mr. Simeon's advice, he read for a year with the Rev. Mr. Granger,

He had now a short visit to London, the excitement of which probably only accelerated the progress of his disease. The next year, at Cambridge, he was again pronounced ill at the college examination. The college now offered him a private scholarship, or post-baccalaurate, and he accepted it; but he visited London, from which he returned to college only to die. His death took place on Sunday, the 13th of October, 1806, when he had just passed the middle of his twenty-second year.

His papers were put into the hands of his friend Southey, who, in 1807, published a selection from his poems and prose compositions, in two volumes, accompanied with the memoir from which the above have been taken. A supplementary volume, consisting of additional pieces, appeared in 1822; and both publications have since been incorporated, and in that form 'The Remains of Henry Kirke White' have been several times reprinted. The edition of 1822 and 1823, therefore that of 1807. This edition, reprinted from the publication of the first collection. The popularity which Henry Kirke White's poetry has enjoyed is owing perhaps more to the touching circumstances of his life, and the attractive picture of his disposition and character than to the merits of the man himself as a diarist, or to its merits.
posed to be the young of the shad. In the fourth volume of the 'Zoological Journal' that eminent naturalist published some valuable papers proving its distinctness as a species from any other member of the Herring genus, *Clupea*, to which it belongs. The whitebait is the *Clupea alba* of Yarrell, and is well figured and fully described in the admirable 'History of British Fishes.' It grows to the length of a man's hand at sides and is of a delicate white colour, whence it derives its name. It appears in the Thames about the end of March or early in April, and during the summer months is abundant, when it forms a dish much valued by the epicure. In the days of Pennant the fisherman's self very irrevocably. I do not appreciate this little delicacy, as he has put on record in his 'British Zoology'; but however in the lower order of epicures, who, he tells us, resorted 'to the taverns contiguous to the places where the whitebait are taken,' are out of the noblest and most learned of the land in the relish of a whitebait dinner. The fishery is continued until September, and the roe would seem to be deposited throughout the summer, as young ones of small size are taken to the end of the season. There are legislative enactments against whitebait fishing, on account of the necessity of using nets with small meshes, but they are now seldom if ever enforced, as it has been shown that no fry of valuable fishes swim along with them.

My grandfather, who immediately returned to Scotland by Dr. Richard Parnell, who gave an account of it in 1838, in its valuable 'Ichthyology of the Frith of Forth' a prize essay of the Wernerian Natural History Society. He remarks, 'I have no doubt that the whitebait will be found to exist in the Frith of Forth as it does in Loch Lomond, with which his father his mother was well acquainted, as it is of quantity, and that the fishermen would find it a new source of income equal or superior to the spooling fishery, did they use the mode of fishing for whitebait that is practised on the Thames.' He also detected the whitebait in great quantities in the Solway Firth, and places the roe of June and July, where however the daintiness of the morsel is unknown to the inhabitants of its shores. The principal food of the whitebait seems to be a very minute species of shrimp, scarcely larger than a moderate-sized flea.

The mouth of the whitebait is so small that the roof of the mouth and tongue of the whitebait are furnished with three or more rows of very minute teeth, a character which at once distinguishes it from the shad, which has those parts destitute of teeth.

**Whitefield, Rev. George,** the founder of one of the two great divisions of Methodism, was, as well as his fellow-labourer Wesley, of clerical lineage, although his immediate progenitors were of the laity. His great-grandfather, the Rev. Samuel Whitefield, of North Lees in Wiltshire, afterwards of Rockhampton in Gloucestershire; in which latter charge he was succeeded by a son of the same name, who died without issue. Another of his sons, Andrew, probably his eldest, lived as a clergyman in his native county, and was the eldest son of this Andrew, was bred a wine-merchant, and followed that business for some time in Bristol, where he married Miss Elizabeth Edwards, a lady respectably connected; but afterwards, having probably been unfortunate, he was transferred himself to Gloucester, and there took an inn. He and his wife, besides a daughter, had six sons, of whom George, the subject of the present notice, was the youngest. I was born in Gloucestershire," says Whitefield himself, in the month of December, 1714. My father and mother, who continued to keep the inn, did her best, in the midst of declining circumstances, to bring him up creditably, had he been a boy. He was not. What he did not expect that she expected more comfort from him than from any other of her children. 'My mother,' says Whitefield, 'was very careful of my education, and always kept me in my tender years (for which I can never sufficiently thank her) from interfering in the least with the tavern business.' He has painted the perversity of his youth in dark colours, but he appears to have been nothing more than a lively and somewhat mischievous and willful boy, with far more promise of good than of evil: with the hard way of stating the matter, he says, 'I was so brutish as to hate instruction; and used, purposely, to shun all opportunities of receiving it (which is what most little boys are in the habit of doing). I soon gave pregnant proofs of an impudent temper. Lying, filthy talking, and at this strong stamp Whitefield would have given when he wrote this to any light or jocular task was much addicted to, even when very young. Sometimes I used to curse, if not swear. Stealing from my mother I thought no theft at all, and used to make no scruple of taking rockets out of the pantry; and the whitebait which she has frequently betrayed my trust, and have more than once spent money I took in the house in buying fruit, tarts, &c., to satisfy my sensual appetite. Numbers of Sabbath have I broken, and generally used to behave in the wantonness of God's servants. Much must I have spent in plays, and in the common amusements of the age. Cards and reading romances were my heart's delight. It has rarely happened that an excited convert has had so poor a case as this to make out against his former life. Moreover, Whitefield is compelled to observe, that he had his occasional religious aspirations from his earliest years. 'Such,' he afterwards says, 'was the free grace of God to me, that, though corruption worked so strongly in my soul, and produced such early and bitter fruits, yet I played composed by the schoolmasters of the Blessed Spirit upon my heart. I had early some convictions of sin. Once, I remember, when some persons (as they frequently did) made it their business to tease me, I retired to my room, and after much crying down, with many tears, prayed over the 118th Psalm. I had always in fact a good and sensitive heart, and never was capable of any hardened or deliberate wickedness. Even when he picked up the halfpence or other small change there was a look in his eye, and he seemed to consider part of the money, he tells us, to the poor. By the time he was ten years of age, too, he had formed the wish of entering the church. 'I was always,' he says, 'fond of being a clergyman, and used frequently to imitate the minister's reading parts. An early doubt was inspired by the pleasure he had already begun to take in the exercise of his fine voice and power of declamation, which were among the greatest of his personal gifts."

'He was placed at the grammar-school of St. Mary de Crypt in his native city, when he was about twelve, and here he made considerable progress in Latin, distinguishing himself besides in delivering the speeches at the annual visits of the corporation, and also in acting (often in girls' clothes) playlets at Christmas. From the gratification of the magistrates. But after a time he got tired of this. 'Before I was fifteen,' he proceeds, 'having, as I thought, made sufficient progress in the classics, and being sent away to London, he set aside from the confinement of a school, I one day told my tutor I believed her circumstances would not permit her to give me a university education, more learning, I thought, would spoil me for a tradesman, and therefore I judged it best not to go to Oxford or Cambridge; and that but my corruptions (?) soon got the better of her good nature. Hereupon, for some time I went to learn to write only. But my mother's circumstances being much on the decline, and being tractable that way, I began to assist her occasionally in the public house, till at length I put on my blue apron and my snuff-box, washed mops, cleaned rooms, and in one word became professed and common drawer for nigh a year and a half.'

This point of abatement to which he had got seems to be sufficient to save him from his own modesty, that worldly humiliation and dishonour proper to form part of a history such as his. After about a year, his eldest brother having married, his mother left the inn; and Whitefield, finding that he could not agree with his sister-in-law, followed his mother in a few months. 'My mother then,' he says, 'though she had but a little income, to have a bed on the ground, and live at her house, till Providence should point out a place for me.' But it appears there neither mother nor son was satisfied. As it had given up the idea of the latter yet making his way to the university, having been a long time lived with my mother for some considerable time,' Whitefield goes on to state, 'a young student, who was once my schoolfellow, and then a scrivener of Pembroke College, Oxford, came to pervade the matter, and told me he wished to have the use of some terms that his academy had not been able to pay. Amongst other conversation, he told her how he had discharged all college expenses that quarter, and saved a penny. Upon that my mother immediately cried out, 'That will do for
my son." Then, turning to me, she said, "Will you go to Oxford, George?" I replied, "With all my heart." Whereupon, having the same friends that this young student had, my mother without delay waited on them. They promised their interest to get me a servant's place in the same college. The result was, that he went back to school, where, he states, he now spared no pains to get forward in his book; and that he was admitted a servant of the college in 1735. As he had left school the religious element in his character had been strongly developed. His own account is that for a twelvemonth he had gone on in a round of duties, "receiving the sacrament monthly, fasting frequently, attending constantly on public worship, and paying other attentions to the Word of God in private." He was thus in the fittest temper of mind for joining the Wesleys and their associates, who had been already for some years known in the University by the name of Methodists. It is not our province to proceed his career here. He was introduced to them about he had been about a year at college, and soon showed that he was to be outrun in zeal by no one. It had happened that, before he and the Wesleys met, Whitefield had for nourishing his devoted temper, by the sermons and books to which they had devoted themselves—those of Thomas à Kempis, Scougal, and Law.

Whitefield was ordained deacon by Bishop Benson, of Gloucester, 26th June, 1736. Soon after, he returned to Oxford, and, in his degree of deacon, preached a most extraordinary sermon. Even the doctrine he delivered was not so novel and arousing as the manner in which he delivered it. Such earnestness, such passionate enthusiasm had never before been heard in the Church of England. He seemed almost to have taken the church in the place of the nation. But even this vehemence lay quite as much in the voice and action as in the language of the preacher. Whitefield's voice, which is affirmed to have been so powerful as to be audible at the distance of a half mile, was that kind of attention that he had most general testimony to have been in all other respects one of the most effective for the purposes of eloquence ever possessed by man: capable of taking every possible tone of emotion, and, whether poured forth in thunder or in soft music, reaching for and striking to the heart with irresistible power and effect. Then he gesticulated, he stamped, he wept with a tempestuous abandonment to which the most successful efforts of the counterfeit passion of the stage seemed tame and poor. He first came up to London in 1737, to officiate for a time in the chapel of the Tower; but his first sermon in the metropolis was preached in Bishopsgate church. He then officiated for a few months as curate at Dummer, in Hampshire. While he was here he received from his friends the Wesleys, who were then in Georgia, in North America. This visit inspired him with a determination to go to the Western world. With this he immediately resolved to comply, but before leaving England he went to pay a farewell visit to his friends in Gloucester; and in that city and Bristol, and afterwards in London, he preached to such over-flowing audiences, and with such extraordinary power, as made the whole country ring with his name. Breaking away however from all the inducements that were held out to keep him at home, he embarked for Georgia on the 23rd of December, 1737. Although it was not till the end of January following that, owing to contrary winds, the vessel got fairly under weigh, about the very time that the ship which brought Wesley back to England was getting into the port from which Whitefield had sailed.

He arrived in America in the month of April, and towards the close of the year. He then returned to England, mainly with the view of raising subscriptions for an orphan-house which he had established in Georgia, and which continued to be a principal object of attention with him during his life. Nevertheless, he continued to preach in associations and the Wesleyan churches, which may be said to have blown into a flame the sparks kindled by their previous separate exertions, and to have established Methodism as a popular faith. It was Whitefield who set the first example of preaching in the open air, which he did on the afternoon of Saturday, the 17th of February, 1739, on Hambledon Mount, at Rose Green, to the collins of Kingswood, near Bristol.

But this time forward his life was spent in incessant movement from place to place, and exercise of his wonderful power of exciting and swaying the feelings of all orders of persons by his peculiar pulpit oratory. He repeatedly revisited America, and traversed the whole extent of the British possessions there; when, on this side of the Atlantic he generally made a yearly round through England and Ireland; he was several times in Ireland, and in 1754, on one of his voyages to America, he spent a short time at Lisbon. To the end of his life his popularity as a preacher remained almost unimpaired; multitudes, at least, continued to crowd to him wherever he appeared, and white and black, young and old, came to hear what he had to tell. As in the case of Wesley also, the more extravagant effects which his appeals had at first in many instances produced soon ceased to be commonly exhibited. Nor was it only the unlettered that he interested and delighted. It was in an year of great distress, when he was preaching in Huntingdon, who made him one of her chaplains. This connection introduced him to the highest circles both of rank and literature in the metropolis; and among his admirers are frequently to be found numbers of court beauties and persons of both sexes of the first distinction in the world of fashion, but such men as Chesterfield, Bolingbroke, and Hume. So also in America he was listened to with wonder and compliance by Benjamin Franklin.

Whitefield and Wesley were in various respects very unlike one another, and, as is well known, they did not long continue to co-operate. They quarrelled, so early as in 1741, about the great question of predestination; Wesley, in the meantime, was publishing From the Sabbath to the Litany, an attempt to reconcile the two systems. Whitefield, contrary to what might have been expected, standing up for the Calvinistic system of irresistible free and eternal decrees of election and reprobation. They never came to agree upon this high matter; but they, comparatively opening the eyes of a million, that by the gospel might be saved, soon cooled down, and, although they never again acted in concert or association, their occasional intercourse was renewed long before they left the world. Whitefield, on the contrary, always looked upon Wesley as the man who ought to preach his funeral sermon; and Wesley actually performed that office for his old friend.

Whitefield lost his mother, in the seventy-first year of her age, in the spring of 1740, and about the same time, with great regret, he found that he and his kin were in a state of war. In the spring of 1740, he applied to two of his friends, a Mr. and Mrs. D. to ask if they would give him their daughter to wife, at the same time telling them that they need not be afraid of sending him a refusal; "for I bless God," said he in his singular epistle, "if I know anything of my own heart, I am free from that foolish passion which the world calls love. But I have sometimes thought Mrs E—- would be my helpmate; for she has often been impressed on my heart." This attempt came to nothing; he therefore went on, at the expense of his health as he alleged, to England to Mrs. James of Abercawberry, a widow of between thirty and forty, who, he intimates, was neither rich nor beautiful, but had become religious after having spent her life like the rest of the world. When he wrote, his child would be a boy, and become a preacher of the gospel; he was right as to the sex, but the infant died at the end of four months. His wife died in 1768; and one of his friends, Cornelius Winter, has recorded that Whitefield and she did not get happily together, that she certainly did not behave as she ought, and that her death set his mind much at rest.

Whitefield himself, whose health had began to give way about 1757, died at Newbury Port, near Boston, in the Parish of Reading, 29th August, 1770. His printed works, besides an edition of Clarke's "Commentary on the Bible," which he published in 1728, consist principally of sermons, either printed from his own manuscripts or taken down by reporters as delivered in a public place. He published a copious journal of his life and labours, and of the various volumes of letters, amounting to 1405 in all, and extending over the time from July 1765, to within a week of his death. A collection of his sermons, tracts, and letters in 6 vols. was published by London, 1717; his journals, like Wesley, he published in his own lifetime; the second edition, with considerable corrections, appeared in 1758. A Life of Whitefield, by the Rev. J. Gill, was published by the College Church of Glasgow, appeared in 2 vols. at London, in 1819; and a volume of nearly 800 closely printed pages, entitled 'The Life and Times of the Rev. George Whitefield,' by Robert Philip, was published.
in 1838. The latter work is one of considerable talent, but its convenience is greatly impaired by the almost entire absence of dates. Much information about Whitefield is to be found in Southey's Life of Wesley; Jay's Memoirs of the Life of Charles Sumner; 2 vols., London, 1809; and The Life and Times of the Countess of Huntingdon, 2 vols., London, 1840.

WHITEHALL, a part of the city of Westminster which extends from near Charing Cross to Downing Street, and from the Chambers before, in his case, the close of 1838 are situated several of the chief public offices of the British government, as the Admiralty, the Horse Guards, the Treasury, the Board of Trade, and others. Whitehall was formerly the site of an extensive palace, which was occupied temporarily by Henry VIII., Queen Elizabeth, James I., Charles I., Cromwell, Charles II., James II., and William III.

The palace was originally built by Hubert de Burgh, justiciary of England in the reign of Henry III. He began to the area of Blackfriars, and by Nov 9, 1246, was sold, to Walter de Grey, archbishop of York. From that time it was called York Place, and became the palace of the archbishops of York, who occupied it for three centuries. The lastest intaglions made which it was Cardinal Wolsey. He made very extensive additions to the buildings, and lived in a style of sumptuous magnificence scarcely surpassed by King Henry. The King often visited the cardinal, and was entertained with princely hospitality. On the death of the cardinal, the king's favour, and he was then ordered to leave York Place, and Henry took possession of it himself. It was not allowed to be called York Place any longer, and it soon afterwards received the name of Whitehall, probably from the brightest and most ornamental of its parts, the Harcourt, with the old buildings. Among the additions made by Henry were 'divers fair tennis-courts, bowling-alleys, and a cock-pit.'

After James I. came to the throne, the greatest part of the palace was in such a state of decay that in 1608, he began to pull down and rebuild. A stately banqueting-house had just been completed, when, in 1619, it took fire, and was entirely burnt. James now resolved to rebuild the whole. Inigo Jones was appointed surveyor-general of the buildings, and the work was directed by Sir Charles Cavendish, Wolsey's former chief, and it was allowed to build York Place, and Henry took possession of it himself. It was not allowed to be called York Place any longer, and it soon afterwards received the name of Whitehall, probably from the brightest and most ornamental of its parts, the Harcourt, with the old buildings. Among the additions made by Henry were 'divers fair tennis-courts, bowling-alleys, and a cock-pit.'

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WHITEHALL, [Cumberland.] WHITEHEAD, PAUL, was the youngest son of Edmund Whitehead, a tailor, of Castle Yard, Holborn, London, where he was born 6th February, 1710, o.s., being Paul's day, from which circumstance he is said to have derived his Christian name, ludicrously unsuitable to his character, and made more memorably ridiculous by his brother satirist Churchill's well-known

...be a whitehead and baptize a Paul!...

On leaving school he was placed as apprentice to a mercer in the city; but he afterwards found means, in what way is not exactly known, to procure himself a seat at one of the inns of court as a student of the law. It does not appear that he was ever called to the bar; but in 1735 he obtained whereabouts to live in idleness, or without a profession, by marrying Anna, the daughter of Mr. Wright, Dyer, Bar of Spain's Hall, Essex, with whom he received a fortune of ten thousand pounds. The lady, who did not live long, is stated to have been young, but very homely in person and little better than an idiot. Two years before this he had published, as the first poem, entitled 'The Table upon the ministry, which he inscribed to Pope, and which brought him both into notice with the public and into favour with the opposition, then headed by the Prince of Wales. This was followed, in 1739, by another piece, entitled 'Mannors,' in the same strain, but written with so much more daring, that, on the motion of Lord Delawar, the author and his father, Dodsley, were forewarned that the House of Lords, and Whitehead found it necessary to abrade for a time. He was now, along with Ralph (upon whom he had poured unparisoning abuse and contempt a few years since), a Dr. Thomson, and others, one of the pack of literary lackeys kept about him by Bubb Dodington; and he distinguished himself by his zealous exertions in the cause of his patron, not only by his pen, but at elections and in other ways. Besides 'The justiciary took the name, 'Honour,' which he published about the same time, and 'An Epistle to Dr. Thomson,' in 1755, were the principal productions of this part of his life. Another of his patrons and bosom associates was his gentleman cousin, Lord Desperance, Whitehead made one, with Dashwood, Sir Thomas Stapleton, Wilkes, and others, in the infamous revellies of Midsummer Abbey, and engaged them to give him some further help; and Whitehead struggled on till he was elected a Fellow of his college in 1742. He seems to have now intended to take holy orders, as had been done by his elder brother John, who held the living of Fersenhof, in the diocese of Wroclaw, in Saxony; for the purpose of entertainment, was changed by his being selected, in 1745, to be tutor to the son of William, third Earl of Jersey (the same who afterwards succeeded to the title, and was the father of the present earl). About a year after this, Whitehead resigned his fellowship. In 1754 he went abroad with his pupil and Viscount Nuneham, the son of Earl Harcourt. After spending a summer at Ribeins and a winter at Leipzig, they proceeded to Vienna, and thence to Italy, returning through Switzerland, Germany, and Holland, and reaching home in September, 1756. During his absence from England, Whitehead had, by the interest of his noble patrons, been appointed to the post of secretary and registrar to the order of the Bath; and the year after his return to the metropolis, he was created a poet laureate, vacant by the death of Colley Cibber. Both these offices he held till his own death, on the 14th of April, 1798.

Whitehead began very early to be known as a writer of verses; and his poems, consisting of epistles, tales, essays, odes, &c., were twice collected and printed under his own direction, first in 1754 and again in 1774: a third edition was published by Mr. and Mrs. Johnson's 'Memoir of Dr. Thomson,' in 1798; and they are also inserted in Chalmers's edition of the 'English Poets,' 21 vols. 8vo, 1810. They are now however utterly neglected and forgotten. His most esteemed production is his tragedy of 'The Emperor of China,' which was first brought out at Drury Lane in 1750, and long continued a success.
'Creusa, Queen of Athens,' first produced in 1754; of 'The School for Lovers,' a comedy, in 1762; and of 'A Trip to Scotland,' a farce, brought out with considerable success in 1772.

WHITETHROAT, Motacilla sylvia, Linn.; Sylvia cineria, Auct.; Currucina cinerea, Bech.ah.

Description.—Male.—Top of the head and space between the eye and the bill ash-colour; other parts grey, strongly tinged with rust-colour, which last predominates prenently in the tips of the back. Wings blackish, tail-feather covers bordered with very bright rusty; quills edged with white; throat and middle of the belly pure white; breast slightly tinged with rose-colour; sides and abdomen rusty grey; the lower tail-feathers; quills of the wing: length, except the most external, which is much the shortest; this last has the outside bar and the extremity pure white; the succeeding feather is only terminated with whitish. Length 5 inches.

Female.—With the tints less pure and the upper parts more clouded with rusty; white of the throat and of the external tail-feather clouded with rusty; no rosy tinge on the breast.

Young.—With more rust-colour on the upper parts; space between the eye and the bill white, and the rusty borders of the wing-coverts wider; external quill edged with rusty, instead of white.

This is the Pauvite grise or Grasette of the French; Maccroppetta delle of the Italians; Klapper Grosnücke, Puhle, Grauliche, Rostgraue, and Grauhnügge Heckernasymucke of the Germans; Kognetter and Mesar of the Swedes; Common Whitethroat, Magey, Maggy-cut-throat, Whey-beard, Wheiti-sky-bird, Uff, Charlie Mark, Pegguy, Pegguy-white-throat, Charr, and Wauhite of the modern British; and Y gnedisfyyn of the antient British.

Geographical Distribution.—Denmark, Sweden, Russia, Siberia, Germany, Holland, France, Provence, Spain, Sicily, Salyria, and Turkey.

A regular summer visitor to the British Islands, arriving about the third week in April, and departing in autumn.

Habits, Food, &c.—The principal food of the Whitethroat consists of insects: it is very fond of caterpillars, and is an considerable consumer of berries and smaller garden- fruits, such as raspberries, currants, &c., among which they and their young make much havoc in July and August. A dwarf bush or a low tangled thicket of brambles, nettles, weeds, and rank grass, is generally selected for the nest, which is seldom found at a greater distance than two or three feet, and lies the outside framed almost entirely of the stems of dried grass; the upper part of the nest is very thin and flimsy at the sides, and the inside is lined with finer grass stuff, or panicles. The eggs, which amount to four or five, are white with a greenish tinge, spackled and spotted with ash-brown and ash-green of two shades.

'Some of the notes of the voice of this bird,' says Mr. Yarrell, 'are nightingalish, other the beginning of January, but will not suffer itself to be outdone. When the nightingale raises its voice, it also does the same, and this its utmost to get above it; sometimes in the midst of its song it will run up to the nightingale, and stretch out its neck as if in defiance, and whistle as loud as it can, striking in the face; if the nightingale attempts to peck it, away it is in an instant, flying round the avairy and singing all the time.'

There is another Whitethroat, also a summer visitor to these islands, and first noticed here by the Rev. John Lightfoot, who found it near Bulstrode in Buckinghamshire, the same who discovered the Reed Warbler in this country.

This is the Sylvia Currucia of Latham and authors; Currucina garrula, Brehm; and is the Pauvite Bardin of the French, Pauvite Dron, and Klaensch弼teny Kerpersmucke of the Germans, Bigiarella of the Italian, Lesser Whitethroat of the English.

Habits, Food &c.—The food of this Whitethroat is the same as that of its more common congener. 'It frequents,' says Mr. Yarrell, 'high and thick hedges, shrubberies, orchards, and gardens, and is occasionally to be seen in two instances with a beautiful tinge of carmine on the breast.

Geographical Distribution.—Denmark, Sweden, Russia, temperate and warmer parts of Europe, Asia, and the Dees. In these islands it is rare as far north as Northumberland, and rarer in Ireland, where it does not appear to have been seen. It arrives and departs about the same time as the Common Whitethroat.

Common Whitethroat.
ash-grey and light brown. The eggs in number are four or five; and Mr. Jenyns has remarked that incubation commences about May. (British Birds.)

In Germany it is termed Das Müllerchen, or the Little Miller, from some of its clacking tones being supposed to resemble the noise of a mill, according to Bechstein, who remarks that as these notes are heard more distinctly than the others, they are erroneously thought to be its whole song; but the rest, he adds, though certainly very weak, is so soft, so varied, and so melodious that it surpasses other warblers. Whilst singing in this under-tone, says Bechstein in his account of this bird, it is constantly hopping up and down the rushes, but when going to and from the nest it claps, claps, and stops and employs the whole strength of the larynx to pronounce this syllable. To enjoy the beauty of its song, Bechstein remarks that it should be alone in a room, and then no other singing-bird is more agreeable, as it rarely utters its call. Both Sweet and Blyth speak favourably of its song, though the former, who gives a very pleasing account of one which he bred up from the nest, says it is not so agreeable as that of most of the other species of warblers.

WHITGIFT, JOHN, a religious house situated between Broad Street and Threadneedle Street, London. While at this school he lodged with his aunt in St. Paul's Churchyard, a staunch Catholic, to whom he gave offence by his aversion to the ceremonies of the church. She in vain endeavoured to reconcile him to the establishment, and he grew more and more at variance, and at last determined to keep him no longer under her roof. On sending him home to his father in the country, she said that she thought at first that she had received a saint into her house, but now she could not have called him a saint, for he went to the University of Cambridge, where he was entered at Queen's College. Thence he soon removed to Pembroke Hall, where he was a more Protestant character. Bishop Riches being the master, and Bradford the martyr, and General Henry, head of that college. In 1554 he commenced Bachelor of Arts, and in the following year was elected fellow of Pembroke. At this college he formed a strong attachment to the master, Dr. Andrews, through the influence of his father, a Catholic, and pursued his studies at Cambridge in the year of King VI., when the Protestant faith had long been protected, he made no secret of his opinions, nor did he desist from making known to many other members of that University. In 1556, on the account of Cardinal Pole, then archbishop of Canterbury, and the papal legate, ordered a visitation of the University. And three commissioners to Cambridge were sent, who, says Whittig, was so much alarmed at the vocation that was coming that he determined to escape by going abroad. He was therefore examined in the presence of Mr. Pembroke, and he was so determined to escape that the commissioners were much surprised that he did not make a further show of it, for not only the public opinion and characters of men were examined, but there was a very strict private examination. His examination was so full, and thorough, that the whole examination was not finished till the next day. For this he was highly distinguished by Dr. Pembroke, and was made a fellow of Pembroke College. He was removed to Trinity in 1557, and was elected a fellow of that college in 1558, and afterwards became president of Pembroke College, and then president of Trinity. He was appointed master of Pembroke College, and was a man of great wealth, and much distinguished in his person. He continued his residence there for upwards of fifteen years, being distinguished for his learning and talents, and holding many high offices and preferments. His lectures as the Lady Margaret's professor of divinity obtained him much distinction. In 1584 he was chosen master of Pembroke Hall, but only remained in that situation for three months; for his fame as a preacher having obtained him the honour of preaching before the queen, he acquitted himself so well that she made him her chaplain, and shortly after became master of Trinity College, Cambridge. In the same year also he took his degree of D.D., and succeeded Dr. Hutton as Regius professor of divinity. In 1586 the bishop of Ely, Dr. Cox, whose chaperlain he had been for some time, conferred upon him a prebend of Pembroke Hall.

Meanwhile Dr. Whitgift was taking an active part in the government of the University, for which purpose he drew up, with the vice-chancellor and some of the heads of colleges, a body of new statutes. He was very strict in enforcing discipline, and he established a new established church; and his activity in restraining any laxity of doctrine or practice in the University, while it brought him into much contention and raised him many enemies, may be regarded as the main cause of his further advancement in the church. Mr. Cartwright, the Lady Margaret's professor of divinity, having in his lectures attacked episcopacy, the Church Liturgy, and other institutions settled at the Reformation, Dr. Whitgift challenged him to a disputation, which took place before the court of the King's Bench, and the judicial proceedings against Cartwright were pending, which ended in his expulsion, he wrote an elaborate composition of these schismatic opinions, and had it before archbishop Parker. In 1571 he filled the office of vice-chancellor of the University, and in the following year was elected provost of the Lower House of Convocation. At this time a book was published, called 'An Admonition to the Parliament,' being a violent attack upon the whole constitution of the Reformed church, its sacraments, its Liturgy, its discipline, and its bishops, which Cartwright held the church as a most dangerous book, and Dr. Parker, then archbishop of Canterbury, who had already had many opportunities of judging of Whitgift's zeal and capacity, and their want of concord in the national church. He wrote the declaration of the archbishop, and was appointed to deliver the declaration and to examine the archbishop's advice and assistance of the archbishop. His answer was written in the same year as the Admonition, and was an able work of great learning, and deserving much skill in composition. He treated the doctrines of his opponents with severity, but in a manner temperate, dignified, and moderate, and had been supported by great preachers, to such as Dr. Whitgift had been supported by other preachers, to such as Do. Whiggift had had been supported by great preachers, to such as Do. Whiggift had had been supported by great preachers, to such as Do. Whiggift had had been supported by great preachers, to such as Do. Whiggift had had been supported by great preachers, to such as
exercised himself to repress papacy on the one hand, and dissent or Puritanism on the other, and repeatedly obtained the thanks of the Privy Council for his success. At the same time he protected the rights and interests of the clergy of his diocese. The strictness of his orthodoxy and the severity of his discipline were displayed at a time most favourable for his further promotion. Grindal, then archbishop of Canterbury, had given great offence to the queen by his leniency to schismatics, and at length, on refusing to yield to the select orders in suppressing (on the meetings of the clergy for worship and the discussion of religious subjects in private houses), he was suspended from his office by the Star Chamber, and confined to his own house. Grindal, a meek and timid man, was anxious to reside in his own house and enjoy his own books; and for this purpose he offered the archbishopric to Whitgift, which he however declined to accept during the life of Grindal. That prelate soon afterwards died, and in 1583 Whitgift succeeded him.

The queen's zeal for orthodoxy was now at its height, and her new archbishop lost no time in proving his determination to enforce conformity. He immediately required all the clergy to subscribe to three articles before they were permitted to execute any ecclesiastical function, viz.:—1. That the head of the church was the supreme pontiff, 2. that the Ordinal and Book of Common Prayer contained nothing contrary to the Word of God; and 3. that the Thirty-nine Articles were to be admitted as agreeable to the Holy Scriptures. He suspended all the clergy who refused to subscribe to these articles, introduced greater strictness in admission to holy orders, and exacted compliance with all the forms and ceremonies of the church. He also obtained from the queen a new ecclesiastical commission, with greater powers than any of the preceding commissions—whom he never failed to consult in every matter of importance. From his high station in the church and his personal influence with the queen and her councillors, his biography may be said to be the ecclesiastical history of England during the remainder of the reign of Queen Elizabeth. Religion was the order of the day, and no one's conscience, however cruelly it does not appear to have been part of Whitgift's character, he was a stern disciplinarian—flexible in his principles, and resolute in their application. Doubt was unknown to him, and he would not allow it in others. Thus he addressed himself to the bishop's see, and directed the ministers, 'And here I do protest, and testify unto your lordships, that the three articles, whereunto they are moved to subscribe, are such as I am ready by learning to defend, in manner and form as they are set down, against all misliking England or alike.' With this pretended spirit of conviction of right, he regarded all dissentients as obstinate schismatics unwilling to be convinced of their errors, and therefore deserving of punishment. His chief object, however, was to make non-conformists from the church, and to seek out and punish heretics. To this duty he repeatedly affirmed that 'her majesty moved and earnestly exhorted him, with strait charge, as he would answer the contrary;' and he would listen to no solicitation to bend him from his serpentine hearing on threats against his person, he writes to Lord Burghley, 'And if there be no other remedy, I am content to be sacrificed in so good a cause: which I will never betray, nor give over; God, her majesty, the laws, my own conscience, and duty, being with me.' The Lord Treasurer Burghley, who had always been his firm friend, often expressed his disapprobation of Whitgift's severity, and contended wisely, as well as humanely, that the ministers of the church ought not to be questioned upon minute points of doctrine, unless the person concerned is suspected of being in the subservience of the unauthorised, and 'wished that the spirit of gentleness might win, rather than severity;' yet in spite of the remonstrances of that great man, and even of the council, Whitgift persisted in maintaining an inquisition in the church which drove many into dissent.

Whether convinced of the evils of such inquisition, or at length overcome by the persuasion of others, we find him, in 1586, assenting to the advice of Secretary Walsingham, and requiring that all ministers, who were hereafter to enter into living or the ministry, leaving unmolessted the clergy already in the enjoyment of benefices, provided they read the Book of Common Prayer according to the appointed ritual.

In order to obtain a uniform opinion, he obtained from the court of Star Chamber, of which he was a member, a decree to restrain the liberty of the press. By this decree, of June 23, 1585, no printing-presses were allowed anywhere but in London, Oxford, and Cambridge: the number of these was to be settled by the archbishop and the bishops of London; no book or pamphlet was to be printed without having been perused by them, and all books selling, uttering, or even binding unauthorised books were liable to three months' imprisonment.

Notwithstanding the strictness of his views in matters of ecclesiastical conformity, he was prepared, if necessary, to endure hardship or severity. His old friend the Earl of Salisbury indeed attested, 'that there was nothing more to be feared in his government, especially towards his late time, than his mildness and lenency. Pregnant instances of how leniently he administered the dread of the papacy, in the pardoning of Udall, and others condemned to die for their sedition: and for the dismission of Cartwright and even other contentious ministers from the Star Chamber. And divers other gentlemen had the like favour obtained for them, and pardoned from both fine and imprisonment, for entertaining the presses and printers of most malicious vituperative books, secretly printed and dispersed.' His respect for learning and learned men was evident on various occasions. He led Whitgift's address 'to the learned antiquary Stow dedicated to his 'Anals' in 1600, and said 'that his grace's great love and affection to all good studies in general, and to antiquities in particular, had been so singular, that all who liked and loved good learning strongly esteemed him their principal and greatest patron.'

The archbishop always took a lively interest in the management of public charities, and contributed substantially to their foundation and support. In 1581 he entered into a contract to build a hospital for the poorest of the poor, in the city of Canterbury, enlarged its endowments, and placed it upon an improved foundation. He also built and endowed, entirely from his own revenues, a hospital, free-school, and chapel at Croydon in Surrey, and contributed considerably to the foundation and support of a college in London. He also stated in the House of Commons, about the same time, that the net income of the archbishopric did not exceed £2200.

On the death of Queen Elizabeth Whlgift was said to have asked King James II to have his translation of the government and Liturgy of the church, and in order to conciliate him he deputed Dr. Nvyl, dean of Canterbury, to wait upon his majesty in Scotland, and to recommend the Church of England to his favour and protection. But the tenor of Whitgift's correspondence from this time shows him to have been in continual apprehension of change. He had been so long accustomed to rely with certainty upon the firm friendship of the queen, that he was not encouraged to trust the intentions of the archbishop. He could not but fear that the latter, who had stated in the House of Commons, about the same time, that the net income of the archbishopric did not exceed £2200, would have been more than content to have the situation of the spiritual lordships of the church in England, and to have enjoyed the undisturbed possession of the diocesan revenues, without any further interference from the crown, so far as affected the Church of England. He had therefore cause to fear that the appointment of Lord Whlgift, as archbishop of Canterbury, would be accompanied with the removal of that from his diocese.
Whigirl however did not live to assist in the consultations of this commission. Soon after the conference, he caught cold while suffering from the effects of his lying so long on the floor. On Sunday, after a long interview with the king, he was seized with a fit, which ended in an attack of palsy and loss of speech. The king visited him at Lambeth, and said that if it should be his lot to die, he would pray for his life; and that if he could obtain it, he would put himself in the hands of Divine Providence. The last prayer was for the church of God, and one of his last exclamations declared his joy that he should die at a time wherein he had rather give up to God an account of his heart and actions, than to be delivered from the execrations among men.

Amidst the latter reflections in his barge, and on the following Sunday, after a long interview with the king, he was seized with a fit, which ended in an attack of palsy and loss of speech. The king visited him at Lambeth, and said that if it should be his lot to die, he would pray for his life; and that if he could obtain it, he would put himself in the hands of Divine Providence. The last prayer was for the church of God, and one of his last exclamations declared his joy that he should die at a time wherein he had rather give up to God an account of his heart and actions, than to be delivered from the execrations among men.

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and, after having taken priest's orders, he set up a grammar-
school of his own about 1501, probably in London. All
that is known of the rest of his life is that he was placed in
1530. But, besides his schoolbooks, Whittington wrote
also Latin verse with very superior elegance; and he is re-
membered in modern times principally as the last person who
was made poet laureate (poeta laureatus) at Oxford. This
honour he obtained in 1519, on his petition to the congrega-
tion of regents of the University, setting forth that he had
then spent fourteen years in studying and twelve in teach-
ing the art of grammar (which was understood to include
rhetoric and poetry or verse-writing), and praying the
regents to reward, or graduated, in the said art. These
academical graduations in grammar, on occasion of which,
as Warcon states, 'a wreath of laurel was presented to the
new graduate, who was afterwards usually styled poeta
laureatus,' are supposed to have given rise to the appella-
tion as applied to the king's poet, originally styled the king's
verifier (versificator), who seems to have been merely a
graduated grammarian or rhetorician employed in the ser-
vice of the king. Whittington, as had been customary, on
obtaining this laureate, or at least his highest, Latin verse,
which were published by being stuck up on the great gates
of St. Mary's church. After this he used to style himself
on his title-pages not only master of grammar (grammatices
magister), but chief poet of England (protovates Anglice).
The title of Poet Laureate, or Poeta laureatus, was adopted in
1737. It is known that Whittington was afterwards admitted to the
degree of Master of Arts. Whittington's Latin verse has
been highly praised. Of his 'Epigrammata' (printed in 1537),
and of the four epigrams which he composed in dedication
to Charles Brandon, duke of Suffolk, Sir Thomas
More, and the poet Skelton (who, like himself, had been
made poeta laureatus at Oxford, in 1489), Warcon says,
'Some of the lines are in a very classical style, and much in
the manner of the earlier Latin Italian poets. (Hist. of
Eng. Poets, ii. 441, &c.)

WHITLEYSEY. [CAMBRIDGESHIRE.]

WHITWORTH, the name of an antient Staffordshire
family, which has produced two diplomats of some
名望.

CHARLES WHITWORTH, eldest son of Richard Whitworth,
of Blowerpipe, in Staffordshire, was born at Albaston,
about the time of the Revolution, and died in 1725,
at London. He was an attaché of Mr. Stepney at several courts,
and in 1718 was himself appointed resident to the Diet at
Ratisbonne. In 1704 he was named envoy to the Court of
Russia; and in 1710 he was again sent to that court
with the title of ambassador extraordinary, to propitiate Peter
the Great, irritated by the arrest of his ambassador in the
previous mission. But the situation at the court of
Whittington was subsequently—Plenipotentiary to the Diet
of Augsburg and Ratisbonne in 1714; envoy extraordi-
inary and plenipotentiary to the king of Prussia in 1716;
and envoy-extraordinary to the Hague in 1717; again
plenipotentiary at Berlin in 1719; and representative of Great
Britain in the character of ambassador extraordinary and
plenipotentiary at the congress of Cambrai in 1722. He
was created Baron Whitworth of Galway, in 1721, by
George I. Lord Whitworth retired into private life in 1724,
died in the ensuing year, without issue. His 'Account
of Russia as it was in the year 1710' came into the bands of
Horace Walpole, and was printed by him at the Shrews-
bury press. In the preface Walpole mentions that many
viewals of it and the Baron's life letters and papers were
in the possession of his relations.

CHARLES WHITWORTH, grandson of Francis, a younger
brother of the preceding, who was M.P. for Minehead
in Somersetshire, surveyor-general of the Woods and Forests,
in 1718, was himself sent to teach at University
of Edinburgh, and in 1714, at London. He was then
sent to be educated at Tunbridge
school, and, on his leaving that place, procured him a
commission in the army. How long he served in the military
diplomatic service does not appear, but in 1786 he
found himself to be sent to the court of Poland as minister
plenipotentiary.

In 1786 Whitworth was sent as envoy extraordinary
and plenipotentiary to Russia. In 1800. Whitworth acquired and retained to the last a marked
ascendency over the councils of the Czarina Catherine II.
After her death (February, 1796) his troubles began. Paul I.,
resolved to undo everything that his mother had done, re-

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Wichmann published several works on various departments of medicine, the most remarkable of which is his 'Ideen zur Diagnostik,' published at Hanover in 1794, in three volumes, octavo. This work has gone through several editions, and is possessed of great practical merit. In all his works he points out with a force the origin of diseases in external circumstances, and proposes correct hygienic rules for their prevention. His great fault as a writer has been considered to be his want of general views and the manner of his details. He wrote several other works on various diseases and their treatment, which were all published at Hanover. He died on the 12th of June, 1804. (Biographie Médicale.)

WICK. [CATHEDRAL] Wick, county of [WICKLOW, COUNTY OF.] WICKLOW, COUNTY OF., one of the twelve counties into which the province of Leinster in Ireland is divided. It is bounded on the north by the county of Dublin, on the north-west and west by the county of Kildare, and on the southwest by the county of Carlow. It is the part of the county of Wicklow near the town of Carnew, is 38 miles; the greatest breadth at right angles to the length, from the border of the county of Kildare to Wicklow Head, southeast of the town of Wicklow, is nearly 30 miles. The area, as stated by the Survey, is 177 square miles, 1 road 7 poles, or nearly 782 square miles; of which 499,988 acres 2 roads 27 poles, or about 780 square miles, is land; and 1088 acres 2 roads 20 poles, or about 18 square miles, is water. The population, in 1821, 121,557, giving rather more than 6,750 inhabitants to a square mile; in 1831, it is stated by Louth, in 1831, it is stated by Louth, that the greatest part of the country is forested; the remainder is meadow and field; the people are chiefly engaged in agriculture; and though the farming is not extensive, it is conducted with great attention and success. The town of Wicklow, the seat of the Catholic bishop, is one of the most ancient towns in Ireland. It comprises 2,193 acres, of which 1,942 acres are meadow and field; and the land is chiefly devoted to grazing. The town is situated on the left bank of the river, which is called the River Frest, and is navigable for small vessels. The town is surrounded by a strong wall, and defended by a moat. The castle and church are ancient, and the town is of considerable antiquity. The town is the seat of the Catholic bishop, and is the chief town of the county.

Surface, Coast-line, Geology, and Scenery. —The county of Wicklow is covered by the mountains which skirt on the south-east the great limestone plain of Central Ireland. The mountains may be regarded as part of an extensive range crossing this part of Ireland in a south-west—south-east direction, and extending from the Barrow and the Suir near Waterford. The central part of the range consists of a mass of granite, having its strike or direction coincident with that of the range, and cutting across the strike of the slate rocks, through which it is bounded by Louth. The town of Wicklow is situated on the coast, 27 miles in a direct line south-south-west of Dublin, or by the mail route through Bray, Delgany, and Newtown-Mount-Kennedy, 314 English miles.

The eastern flank of the Wicklow mountains presents a varied aspect, being worn into deep gulls and dells, which are lined with abrupt precipices or overhanging ledges, from which and the mountain composed of slate and free from metamorphism. The consequence to the south-east is distinguished by the most beautiful and romantic scenery. The western flank, on the other hand, presents less variety; the gulls and valleys, which exhibit fewer features of attraction, being more rounded and expanded. The rivers which arise in these have a general tendency towards a north-west direction; but on both sides of the central range the transverse valleys either merge into or cut across more expanded longitudinal vales by which the central range is flanked, and beyond which arise offsets or detached groups and parallel ranges of lower hills. (Mr. Weaver, in Geol. Transactions, vol. v., p. 123.)

This mountain range cannot be considered as having a clearly defined crest or ridge extending longitudinally, but it is intersected by its transverse valleys, so that the mountains which compose it are separated into two groups, with their principal summits, as are follows:—


1. Prince William's Seat (on the border of the county), 1823 feet above the level of the sea at low-water; 2, Kippure (on the border of the county), 2173 ft.; 3. Butter Mount, 1459 ft.; 5, Dowry, 1060 ft. These are enumerated in the order of their position from east to west. The following are the head of the Dargle: 6, Maulin, 7, Tonduff, North, 2049 ft.; 8, Tonduff, South, 2107 ft.

Group II.—Between the Dargle and the Liffey on the north; the Avon-more on the east; the Avon-beg, which waters Glen-malur, and the King's River on the south; and the King's River at the Liffey, west. 9, Blackmoor Hill, south-east of Blessington, 1464 ft.; 10, Sorrel Hill, 1015 ft.; 11, Black Hill, 1084 ft.; 12, Moan Bank, 2313 ft.; 13, Gravel, 2352 ft.; 14, Duff Hill, 2364 ft.; 15, Mullaghcleevaun, 2783 ft.; 16, Tolnaiaghe, 2307 ft.; 17, South-east of Donore, 2401 ft.; 18, Mountain north of Lough Dan, 2103 ft. The mountains in these two groups are chiefly granitic. Mica-slate is found on the south-east side of Group II., and clay-slate farther to the south-east; clay-slate is also found on the north-west side of the county.

Group III.—Between the Fartary or Vartry and the sea.

19, the hill above Bray Head, 608 ft.; 20, Little Sugar-loaf, 1130 ft.; 21, Great Sugar-loaf, 1631 ft.; 22, Down's Hill, 1222 ft.; 23, hill west-south-west of Newtown Mount Kennedy, 1964 ft.; 24, Hill west of Newtown Curracloe, 1252 ft.; 30, hill above Wicklow Head, 298 ft. Douce is granitic; the hill (No. 26) east of Lough Dan is of mica-slate; Curracloe is of quartzite; see the others in the county.

Group IV.—Between the Fartary and the Avonmore, extending southward to the ocean.

25, Douce or Djoce, near the head of the Fartary, 2384 ft.; 26, hill east of the Fartary, 2730 ft.; 27, hill east of the town, 1272 ft.; 28, hill west of Moneystown Hill, 1408 ft.; 29, Carrickmacreilly Mountain, 1225 ft.; 30, hill above Wicklow Head, 298 ft. Douce is granitic; the hill (No. 26) east of Lough Dan is of mica-slate; Curracloe is mostly of quartzite; see the others in the county.

Group V.—Between the King's River on the north, the Avon-beg and the Ovoca on the east, the Daragh or Derry or Aughrim, a feeder of the Ovoca, on the south; and the Slaney and its affluent the Carrigogower, on the west. 31, Slievenagord, 1242 ft.; 32, Wet Mountain, 1753 ft.; 33, hill near the junction of the Carrigogower with the Slaney, 1023 ft.; 34, Table Mountain, near the head of the Slaney, 2302 ft.; 35, hill south-east of Table Mountain, 2405 ft.; 36, Lugnaquilla, the highest mountain in the county, near the source of the Little Slaney, 3030 ft.; 37, Carrawaystick Mountain, 2211 ft.; 38, Croghan Moira Mountain, 2175 ft.; 39, Slieven Reagh, 1904 ft.; 40, Carrig Mountain, 1845 ft.; 41, quillen and Keaden, 2460 ft.; 42, Greyscaton Hill, or Brus- selstown Hill, 1343 ft.; 43, hill above Cillur- taggart Lodge, 1754 ft.; 44, hill above Preban church (to the north), 1270 ft. The last two hills are between the Daragh or Derry, and its feeder the Ovoca. The district to the west of the mountains is chiefly granite, although a considerable portion on the eastern side is occupied by slate rocks; the part nearest to the granite being occupied by mica-slate and the remoter part by clay-slate. Carrawaystick and Croghan Moira are chiefly granite, with some mica-slate and clay-slate. Hill No. 44 is also slate. Slate-rocks prevail also, but not so extensively, on the western side of the group, where they compose the mass of Brusselstown Hill; and in the granite district some of the mountains, as Lugnaquilla and Keaden, are capped with mica-slate.

Group VI.—West of the King's River, the Carrigogower, and the Slaney. 45, Hill to the north of Boystown or Hollywood church, between the King's River and the Liffey, 1075 feet; 46, summit of Timown, to the right of the road from Kilconlie to Ballinglass. The hills of this group
are of slate : mica-slate on the south-eastern side; but clay-slate in the other parts of the group.

Group VII.—Mountains south of the Daragh and Ovoca. 47. Croaghan or Croghan Kinshela, 1390 feet; 48, summit near the head of the Glendine River, 1320 feet. Generally speaking this district is occupied by clay-slate, but Croaghan Kinshela is formed of granitic and trap rocks alternating with clay-slate.

Group VIII.—Mountains of the barony of Shillelagh, which form a good westward projection from the main part of the county. 49 and 50, hills between the Daragh or Derry, which joins the Ovoca and another Derry, which joins the Slaney, 1316 feet and 1416 feet high respectively. 51, the Slieve na Tionney, 1312 feet; hill west of Shillelagh village, 1381 feet. This district is occupied on the western side by granitic rocks, in the centre by mica-slate, flanking the granite on the east, and on the eastern side by clay-slate.

The Granite which forms the surface-rock of the central district, occupying a tract of varying breadth, from 7 to 14 miles, is the fundamental rock on which the other formations rest, protrudes in isolated portions in the districts occupied by the slates. The granite is in general remarkably pure, and free from minerals not essential to its composition. It varies much in the size of the grain: some of the largest-grained and most beautiful occurs in Glencree, in the northern part of the county, amid the mountains of our first group; some of the finest-grained, remarkably uniform in size, is found in the glen of Imale, on the northern side of Keadeen or Cadeen Mountain (No. 41, Group V.). The granite is not unfrequently porphyritic, as in Glencree and Glen-amaconn. School, tourmaline, garnet, beryl, rock-crystal, epidote, heavy spars, magnetic iron, chlorite and mica, and other minerals are found in small portions. Contemporaneous veins of granite, and less frequently of quartz, are found in the granite mass. Granite of later formation is occasionally found alternating with the rocks which rest on the fundamental granite.

The mica-slate district on the eastern flank of the granite is in general narrow, never exceeding three or four miles in breadth: it generally passes into clay-slate, by which it is bounded on the east side, throughout its course in this county. Hornblende and hornblende-slate-greenstone, quartzite, felspar, tourmaline, beryl, amphibole, epidote, quartz, mica, chlorite, and other minerals are found in small portions. Contemporaneous veins of mica-slate, and less frequently of quartz, are found in the granite mass. Granite of later formation is occasionally found alternating with the rocks which rest on the fundamental granite.

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southward the cliffs subside, and a shelving shore succeeds for a mile and a half, until a small headland, the Grey Stones, presents another range of low cliffs, only half a mile long, which are very soon replaced by a low shelving shore extending ten or twelve miles south to the mouth of the Vartry, or Fartry, at the town of Wicklow. Here the cliffs (which in one place are 69 feet high) reappear, and continue for two miles to the neighbourhood of Wicklow. Elevation: The upper banked bed is a deep broken shore, which extends for seventeen or eighteen miles to the southern boundary of the county to the stream which separates it from the county of Wexford, interrupted occasionally by low cliffs, and sometimes skirted by sandhills or rough ground. There are the ruins of a castle along the coast to the south of it. Brittas Bay is bounded on the north and south by small headlands, with low cliffs. The southern headland is called Mizen Head; and a ruined tower on the hill, in the side of which the cliffs are formed, is only two feet above low-water mark, and the face of the cliffs is still lower. The cliffs are of the clay-limestone formation, which occupies the whole coast. The mountain which rises above Bray Head is of quartz rock. The whole length of the coast may be estimated from thirty-five to forty miles in all. The only harbours are formed by the mouths of the rivers Dargle, Vartry, and Ovoca, and they are all unimportant.

The scenery of the county of Wicklow is pre-eminent for its glens justly celebrated for their remarkable beauty, with dark cleft or hollow, between two mountains, the sides of which are richly wooded, is a much admired spot, and, owing to its nearness to Dublin, is much frequented. The little river Dargle, which flows through the glen, is formed by the union of the Glen-dasan and the Glen-done-lasane, which latter waters the ancient demesne of Powerscourt (the residence of Lord Powerscourt), in the deer-park of which it forms a beautiful waterfall. The直流 falls over a perpendicular rock at an elevation of 300 feet: it is a mere stream, but its fall is very striking from the rich verdure of the surrounding scenery than from the volume of water. The appearance is most striking when a heavy fall of rain has swollen the stream.

The Glen of the Downs is a romantic opening between two mountains, the sides of which are covered with rich hanging woods, interspersed with rugged cliffs. The glen is watered by a small stream flowing into the sea near the village of Delgany, and is partly comprehended in the beautiful demesne of Belvedere, the seat of Mr. G. Moore. It is surrounded by the picturesque form of the Great Sugar-loaf Mountain, the conical summit of which, viewed at a distance, appears to terminate in a peak, but is found, on attaining it, to be crowned with a small flat plain, commanding a noble view of the sea.

The Devil's Glen is a narrow pass between two mountains rising precipitously on each side of it, and has little more than five miles, with passages for the river Vartry, which forms a united stream in this scenic direction. The northern side of the glen is occupied by rich woods, with masses of rock occasionally breaking through the foliage. The southern side is comparatively bare of wood, but the rugged face of the rock is relieved by patches of green-awn, some of them planted with forest trees. The two sides of the glen present in their geological structure and appearance a marked correspondence. The glen, from its depth and narrowness, is dark and sombre in its character. At its upper or western extremity is a noble waterfall: the Vartry falls in a sheet of water, about thirty feet long, from one hundred and sixty to two hundred feet high in one unbroken sheet into the hollow beneath, and presents, particularly when the stream is swollen by rains, a spectacle of great magnificence.

Glen-da-lough, or Glen-anamnas, is a valley amid the higher mountains of Belvedere House, a curved precipice partly incloses a vast hollow into which the river Avonmore (which waters the valley) falls over the brow of the precipice. Above the waterfall at some distance rises the lofty mountain Tompleyage, the sides of which present many bold granitic precipices. Under one of these precipices, from 400 to 500 feet high, is the small circular lake or tarn Ober, at an elevation of 1828 or 1830 feet above the level of the sea. The military road made after the insurrection of 1798 ascends this precipice. The valley of Glen-da-lough is watered by the Glen-ealo (apparently a variation of the name Glen-dalo), i.e. Glen-da-lough, the valley of two lakes), which joins the river Glen-danass, and falls with it into the Avon-more. The valley extends east and west, is inclosed on the north and south sides by lofty, barren, and inaccessible mountains, which unite and close the western or upper end of the valley, presenting granitic or mica-slate precipices 500 feet high. The river tumble over the rocks at the west end so as to form a cascade, and then expands into two streams, over a mile wide, which are separated by a quarter of a mile wide, and range 440 feet above the level of the sea; the lower lake is about 435 feet above the level of the sea, only about a quarter of a mile long, and about half that distance wide. Adjacent to this lake, at its lower end, are the ruins of a church.

Glen-danass, or Glen-anamnas, opens into the valley of Glen-dalough, or rather the three valleys, Glen-amacnass, Glen-danass, and Glen-dalough, all open near the same point into the wider valley of the Avon-more, which should be regarded, with reference to its direction, as a prolongation of Glen-amacnass. Glen-danass is inclosed on both sides by steep and lofty hills; near its upper end is the lake or tarn Nabangass, half a mile long, and nearly as much wide, about 1899 feet above the level of the sea, and having on its south side precipices rising 300 feet above the margin of the lake.

Glen-malur, or Glen-malure, is to the south-west of the last valley, and nearly parallel with the former, and is a south-eastern direction, having the Table Mountain (Group V., No. 34) at its upper or north-west end. The mountains rise with considerable steepness 600 or 800 feet above the valley, and more than 2000 feet above the level of the sea. To the south of the table is the ruined castle of Glen-amacnass, the last of the valley, but not immediately adjacent to it, 2500 feet above the bottom of the valley at the lead-works, or more than 3000 feet above the level of the sea, having at its top a large flat stone resting on low supports, somewhat like the table of the Druids. The west side of the vale of the glen is a waterfall formed by the Avon-beg (or, as it is called in the upper part of its course, the Eos), which waters the valley. The fall is broken by projecting crags, and loses itself in a succession of rapids in the hollow northern. Very different from the latter is the Avon-beg itself. The Dargle and the Downs, Glen-malur is characterized by the absence of trees; and this circumstance imparts to it an air of peculiar sterility and desolation. There are lead-mines in Glen-malur, and its mineral treasures have given it the name of the Gold Coast. The Avoca, or Ovoca, is a rapid stream rolling over a rocky bed. The Avon-more has a gentle current. Castle Howard is a modern building in the Gothic style, but of somewhat incongruous architecture, combining the castellated with the monastic character.

The picturesque beauties of the Vale of Ovoca, or Avoca, have been celebrated in Moore's 'Irish Melodies.' In his song 'The Meeting of the Waters' he has commemorated the junction of the Avon-more and Avon-beg, which unite to form the Avoca. Mr. Moore speaks of the junction of the 'rivers Avon and Avoca.' This, if we may trust our other authorities, is not correct. The name Avoca, or Ovoca, is not given except this place the expansion of the valley at waters are both called Avoca, one the Avon-more (or Great Avoca) and the other the Avon-beg (or Little Avoca). The scenery near the point of junction is improved by cultivation: the grounds of Kingston House, Mount Avon, Avoca Cottage, and Castle Howard, add to its beauties. The Avon-beg is a rapid stream rolling over a rocky bed. The Avon-more has a gentle current. Castle Howard is a modern building in the Gothic style, but of somewhat incongruous architecture, combining the castellated with the monastic character.
Hydrography and Communications.—The central mountain-ranges divide the county into two slopes, the eastern and the western. The first is drained by the Dargle, the Vartry or Fartry, the Three Mile Water, the Potter's River, and the Ovoca: the western by the Liffey and the Slaney, with their respective affluents. These two last-named rivers, although distant from each other, afterwards turn eastward, and passing through openings in the mountain-range, fall into the Irish Channel, as well as the rivers which drain the eastern slope.

The Dargle (11 or 12 miles long) rises to the north-west of The Curragh, in the Partry Mountains (No. 25, Group IV.), and flows first east, then north, then north-east, into the Irish Channel below Bray. In its upper part, above the junction of the Glen-cree, it is called the Glen-isl/orane.

It receives the Glen-cree (7 miles long), the Cookstown (7 miles), and a small stream from the precipitous side of the Scalp (5 miles), all on the left bank. This last stream, and below its junction, the Dargle itself, forms the boundary of the counties of Wicklow and Dublin.

The Fartry, or Vartry, rises on the eastern side of Douce Mountain, and has a course of 18 miles, first east, then south, then south-east into the Irish Channel, below the town of Wicklow. It waters the Devil's Glen. It approaches very near to the sea, about two miles north of its mouth. It has, moreover, from being passing near the ridge of sand or beach which here lines the shore, expanded into a narrow lagoon above 2 miles long, called 'Broad Lough,' at the southern or lower end of which it flows into the sea. The long tongue of land intercepted between the lagoon and the sea, is called the called the Devil's gap, or Murnah, and is partly occupied by the Wicklow race-course. The Fartry receives no tributaries worth mention.

The Three-Mile Water has a course of 6 miles, and the Potter's River of 7 miles, and are joined by the junction of the Avon-more (22 or 23 miles long) and the Avon-beg (15 miles). The Avon-more rises on the south-east slope of Duffhill (No. 14, Group II.) and passes through Lough Dan; it receives on the left bank the Annamoe, which rises in Crocken Pond (7 miles), and flows 1720 feet along the side of the slope, has a course of 6 miles, passing through Lough Tay, an oval lake the longer diameter of which is above half a mile, elevated 807 feet above the level of the sea, and surrounded by steep, abrupt, and wooded heights. The Avon-more also receives also the rivers which respectively drain Glen-anamnae, Glen-dasan, and Glen-dalough: the first has a length of 8 or 9 miles; and the third, which is called the Glen-sallo River, of 5 or 6 miles; the second, which joins the Avon beg, has only a course of 4 miles. Lough Dan, through which the Avon-more flows, is nearly 2 miles long from north-west to south-east, and about 3 furlongs across at the broadest part; it is about 680 feet above the level of the sea. Lough Nahanan (5 miles long), and the Upper and Lower Lahoury, or Lough dalough, have been described. The Avon-beg receives no tributaries of importance. From the junction of the Avon-more and the Avon-beg the river now called Ovoca flows 9 miles into the sea below Arklow, receiving on its right bank the Daragh, or Derry, or Aughrin (16 miles long), into which the Gold-mine River (4 miles long) and the Ow (10 miles) both fall. The Ow rises on the eastern slope of Lugnaquilla (No. 36, Group V.). The whole length of the Ovoca, measured from the head of the Avon-more, is about 34 or 35 miles.

The Liffey rises in a bog near Crocken Pond (from which the Annamoe flows) and has a course of 19 or 20 miles, first north-west, then south-west, (partly within and partly upon the border of the county), to the place where it meets the river Liffey, a river of the mountain-range, which it chiefly belongs. It receives the King's River, which rises on the south-western slope of Tonelagee (No. 16, Group II.), and flows first south-west, then west, then north-west, and flows 6 miles into the Liffey through Blunden and Ballymore Eustace, receiving in its course a number of small streams, none of them more than 4 or 5 miles long.

The Slaney rises on the northern slope of Lugnaquilla, and flows in a winding channel, 12 miles west to a little below the junction of the Carrigower: it then turns southwards, and flows 6 miles by Baltinglass into the county of Carlow, to which county, and to the county of Wicklow, the lower part of its course belongs. Its whole course, in the county of Wicklow, is about 18 miles. It receives on the left bank above the bend the Little Slaney (6 miles long) from the western slope of Lugnaquilla, and the Carrigower (6 miles long) from the north-west slope of Sliheen Gadoe (No. 31, Group V.) on the right bank. The Derreen, a feeder of the Slaney, which it joins in the county of Carlow, has its source and the upper part of its course in this county. It then flows through the districts of Glen-macnass and Glen-dasan, and sometimes flows through the southern part of the county. The affluent of the Slaney, known in different parts of its course as the Green-inland, Slisheen LAW, island, or Derry river, has its source, and a considerable part (10 or 20 miles) of its course, within or upon the boundary of this county: in which it joins the river of the county. The affluent joins the Slaney soon after quitting this county near Clongeal on the border of the counties of Wexford and Carlow.

Most of the lakes have been noticed in connection either with the scenery or the rivers. Upper Lough Bray and Lower Lough Bray are mountain lakes in which the feeders of the Glen-cree have their respective sources; the first is 1453 feet above the level of the sea, and has a basin of 25,620 acres, and the second is above the level of the sea, and has an area of near 65 acres. They are near each other and are skirted on the west by steep and precipitous rocks on the upper slope of Kippure Mountain (No. 2, Group I.). There are seven small lakes in the north-western part of the county.

The communications of this county were formerly very deficient. The great central range of mountains was passable only at three points, within the county, viz. at Sally Gap, at the head of the Liffey; at Wicklow Gap, at the head of Glen-dasan; and in the same part of the county. In the last second of these passages were scarcely practicable even in summer. This difficulty of communication rendered the part of the county a comparatively secure asylum for the fugitives after the suppression of the insurrection of 1798, and a part of the line of the light-house from Wicklow to Dublin, to which effect it was particularly available for a considerable time. Since that period the whole of the mountain district has been rendered accessible by the construction of an excellent military road, which enters the county on the north, near the head of Glen-dasan, and runs southward and by the Lower Lough Bray through Glen-anamnae, and across Glen-malar, to Asphavanagh Bridge on the Ow. The Dublin and Wexford mail-road enters the county on the north side at Bray, and passes through Delgany, Newtown, the town of Ashford, Bridge, Rathdrum, and Arklow into the county of Wexford. A branch road from this in the neighborhood of Ashford Bridge leads to Wicklow. One of the roads from Dublin to Carlow passes through the county of Wicklow, near the town of Slane, and Baltinglass. The other roads have been improved very much of late years, so that a horse can convey three times the quantity of produce to market which he could twenty-five or thirty years ago. There is still however want of new roads in many places and of the improvement of existing ones. The tillage of mountain-farms has been seriously impeded by the want of roads.

There is no water-carriage in any part of the county, except on the coast.

Statistical Table: Area and Condition of the People.—The following statements from the evidence collected by the Commissioners for inquiring into the state of the poor in Ireland, relate to the barony of Upper Tallbotstown, which includes a portion of the central mountain district of that county, and extends to the north of the town of Baltinglass. It is probable the statements are mostly applicable to the county in general. The barony comprises about 42,928 statute acres, or 62,510 statute acres, of which perhaps 12,000 to 15,000 acres are uncultivated mountains. The mountains are generally composed of "green flag, quarz, stone, in large blocks underneath, and smaller pieces near the surface, covered with a small depth of moor or peat, 2 or 3 feet deep." The soil of the lowland is usually a rather light black mould, with a subsoil of gravel or sand, and sometimes of yellow clay. The quality varies much, but is generally good. Most of the mountain land is dry, and much of the lowland...
but the foot of the mountains and a large extent of bog and moorland are much in want of draining.

The farmers of the district and chiefly small dairy or breeding farmers; some of them pursue to a considerable extent the business of 'vealing,' or of fattening calves for veal. The farms are of all sizes, but most commonly of 30 or 40 acres; and about one-twentieth in mountain farms, or one-fifth in the lowlands, is held in tillage. The dairies are of from 5 to 20 cows; the system of management pursued, whether in the mountain or lowland districts, is nearly the same, but the produce varies considerably. The milk is much greater a measure than formerly, partly from a great extent of waste land having been reclaimed, and partly from improved cultivation.

The rotation of crops is very good; it is commonly as follows:—Oats are grown in the first year after breaking up the grass-lay; in the second year, potatoes, manured; in the third year wheat, barley, or oats. Sometimes the land is laid down in grass immediately after this rotation; sometimes not until another crop of potatoes and another of corn have been raised. Clover or grass seeds are usually sown for the crop of corn, and the land then left under grass from four to twenty years. Clover is cultivated to a considerable extent, and some tresses and trefoil are grown by the larger farmers. One or two gentlemen grow turnips or mangai wuzel, but only to a small extent. In many of the smaller lowland farms, the grass, well, is well suited to them. The peasantry have little or no knowledge of the advantage of an alternation of crops; and do not cultivate the artificial grasses, except clover, which some of them are beginning to grow. The rotation of grasses and land sheep is common, and many parts of the farm in succession, except in the wet or moory bottoms, and in the sheep-walks, which form a large part, if not the whole, of a mountain farm. Little or no follow is made, and very little corn commonly grown after potatoes.

The mutton used for dung, procured chiefly from the farmer's own stock, lime, and peat, or, as it is called, 'bog-stuff.' The use of lime is increasing, though there is none dug in the county, except limestone gravel; the lime is bought in open boxes to be burnt to forty shillings per cwt, which is the usual proportion. The use of 'bog-stuff' mingled with dung, ashes, or other refuse of the house and yard, is fast increasing, especially for the potato crop.

The farmers all plough with two horses, and use Scotch ploughs on the lighter loughs of corn construction and other modern implements are used. The 'fack,' a very strong spade of long, narrow, and almost pointed shape, like an English draining spade, is the only implement employed in mountain ground: it is well adapted to strong roots and hard grund.

Seeds wheat is usually limed and pickled, in order to avoid smut; and the crop is weeded, but very imperfectly, in June. The farmers are generally careful as to the time of reaping their crops, but some let them stand longer than the others. The peasantry frequently incur loss by neglecting to cut their own crops in time, while labouring for hire.

Corn is generally threshed immediately after harvest to pay rent and other expenses. The growth of potatoes has been much extended since the tithe composition, and from the quantity of land which the improved method of farming has afforded facility for bringing into cultivation; but they are never grown for sale. The peasantry always keep the potatoes.

The small farmers grow 'cups,' a kind of potato combining productiveness and goodness of quality; the labourers grow 'tumpers,' which have no merit but productiveness. The refuse, or small potatoes, are kept for pigs or fowls.

The dairy system, which is found for the most part in the extensive mountain tracts which the county presents; and there are hundreds of families who would gladly undertake to bring them into cultivation, if allowed to do so, on condition of being rent-free for a certain number of years, or of being paid a certain sum per head, in aid of their labours. In some parts, under some landlords, this extension of cultivation has taken place, and patches of potatoes, oats, and pastures are found on the very tops of some of the mountains.

The farmer's feeding land: the grass land is used only for dairying or rearing stock, except on one or two large farms. By the introduction of green crops for feeding, the same quantity of land would rear or fatten a greater number of cattle, and give employment to a much greater number of persons. A great improvement has taken place in the cattle stock by the general introduction of the Durham or short-horned breed. Excellent half-bred stock is seen even on the smallest farms, and beautiful thorough-bred animals upon the land of several farmers in the parts of Wicklow, Kildare, and Carlow counties, which adorn the barony of Upper Tallowtown. Sometimes a hundred head of half or thorough-bred Durham cattle have been seen at one fair, and have fetched high prices; persons coming from various parts of England and Ireland to buy them. Indeed it is only the high prices obtained for the young and choice stock of cows and bulls, and the heavy rents they do. On the mountains the native cattle are kept, as being more hardy. The butter made is sent chiefly to Carlow market, where it is considered to be of first quality. It is packed after each churning, when they have sufficient milk to fill a May at once, but have few enough for this, they usually wait for two or more churnings before packing, in order to have the contents of the firkin of the same colour. There is little or no cheese made, the farmers只 produce annually a cwt. of butter, besides rearing a calf.

Few sheep are kept on the lowland farms, but a great number on the mountains. The large old Irish breed, improved by crossing with the Leinseers, are kept in the valley, and the fat sheep, weighing fully 90 pounds per quarter: it is not so high on the legs, but is heavier in the carcass than formerly. The sheep are seldom fattened by the farmers, but are sold to graziers for feeding at a year and a half or two years old. The fleece of the mountain sheep is very useful, and is a chief source of wools for wethers. The native mountain breed, either indigenous or long since naturalized, is kept on the mountain farms: it has been of late years much improved both in shape and wool by crossing with English breeds. A cross between the south-down breeds and the mountain sheep is the Orkney, which, besides being become much more popular, is of high wool. It is thought that the Leinseers should be crossed with this breed before it would be possible for the Leinseers to be raised. The sheep are much smaller than the lowland, weighing only about fifteen pounds the quarter, and the price is about three pounds for eves and four pounds for wethers. They are sold, either from the farms, or from the lowland farms, and are then sent to lowland farms till the following May, at a charge of from 4s. to 5s. a head for wintering. The stronger wethers are however kept on the mountains during the winter in case of very stormy weather. Good mountain land will feed in the summer months three sheep on every two acres. The wethers are sold to the graziers at four years old. Small farmers seldom keep sheep except on the mountains, where they have a few.

The pigs are generally killed when young, large boned, and coarse. Few are bred; they are commonly purchased out of the Connaught droves, the farmers finding this plan more profitable than breeding them. They are killed for bacon, in which a considerable trade is carried on.

In the management of the dairy there is great negligence. The room appropriated for it usually adjoins the kitchen; or if there is no convenience in the house, one of the best of the outhouses is appropriated for the purpose. One farmer who had a dairy of fifty or sixty cows, the English assistant-commissioner found had removed his dairy into a corner of his kitchen, while he was threshing in the outbuilding, which he called his dairy, but which was much more fit for his cow-house. In the dairy of another the ceiling was so high that the stalls were in two tiers, with tucks between, and which description, which omitted a mixture of odours that mechanically impelled the fingers to the nose. In fact such is the general absence of the accommodation, cleanliness, and comfort, as is in the cottages, that it is indispensable to successful dairying, that it is perfectly unaccountable how the farmers here can produce butter of so good a quality; and it must arise in a great measure from the excellence of the soil and climate for the purpose. (Connaught, &c., Observations, &c., by John Moore.)

The fences are generally single or double ditches, with furze or quick hedges, but more generally furze: sometimes they are mere banks with a few furze plants on the top. From their imperfect condition they frequently occasion litigation to the owners on account of cattle trespassing. The gardens of the poor are better fenced than the fields of the farmer. There is not much loss of land by useless fences, except in the hands of gentle

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men or large farmers, where broad fences are kept up for
ornamental purposes.

Land is usually let by the Irish acre: and the eager
competition for land from the absence of other means
of maintenance for the people has kept rents up unnaturally
high. The rent of tillage land is about 2s. an acre: the rent of con-ace ground is very much higher.
The tenant calculates on his butter for meeting the rent of
one half-year, and on his corn for the rent of the other.
Four-fifths of the land in the barony of Upper Talbot-
town are in tillage: the rest under ditches; but there is no perceptible difference in the con-
tenance of the tenantry and labourers under the two classes
of landlords. Farms are chiefly held under lease for one
life, or twenty-one years; sometimes for three lives or
through the land, because of the desireable one: they pay £2. to 3l., or even 5l. a year for
a cabin and an acre of ground, or for the ground with per-
mission to build a cabin themselves; and from 6l. to 16l. for the grass, hay and straw for the
cow.

A constant complaint of the rest of the farmers and their
wives sometimes keep fowls, and employ themselves in
knitting stockings, chiefly for use in their own families,
rarely for sale. The profit on a pig was estimated, at the
time of the inquiry, at from 20s. to 30s., or perhaps more.

The food of the labourers consists almost wholly of potato-
tatoes; they never have eggs, except when working at a
distance from home, when they perhaps have one egg
boiled with their dinner. The small farmers occasionally eat a few eggs, but sell the greater part
of what their fowls produce; they have sometimes herds of
a little offal pork, and now and then some bacon or
beef. The potatoes are plentiful, and the labourer family
have three meals a day; one of potatoes, sometimes two, and
sometimes only one. In the interval when the old potatoes are
useless for use, and the new crop is not gathered in (which interval
comprehends a month or six weeks in and about the month
of August), potatoes are the chief food of the labourers.

The conduct of the labourer and his family is worse than
in most. The poor have three meals a day; they are kept from starvation only by the aid secretly
conveyed to them by some kind neighbour, who can ill afford
to spare anything, but who suspects them to be in the ex-
tremity of destitution. The amount of relief thus imparted
is very variable: it is generally small, but frequently
wholly inadequate. When the general poverty is aggravated by
the partial failure of the potato crop, the distress becomes
dreadful indeed, and on some occasions, but for the ad-

cance of money by government, hundreds must have died
through famine themselves.

The cabins of the labourers are built of yellow clay and
mud, with stone foundations; or of mud and stone mixed,
or mud alone. Those with one apartment are usually
14 feet by 10; those of two apartments 18 feet by 10. The
walls are generally built of clay and mud, with clay
intermixed generally with straw; sometimes with heath, reeds, or
potato-stalks, with sods underneath. The floor is either the
natural earth, or is covered only with a thin coating of
clay. The cabin, when it is not kept in repair by the
landlord, is so leaky, and in so wet a state, that it is
commonly in a wretched condition. Cabins are usually
damp, from the floor being below the general level of the
ground; and the dampness is increased by pilferings
and the practice of making the hole for the dung-
and refuse from the household there is small. The
best cabins have a large open chimney, the common ones
only a hole in the roof. The windows are small, usually
16 inches by 10 or 12; those in cabins near the towns
are 20 feet by 12. In the cabins of the labourers, when
broken is frequently replaced by paper, wood, har-
straw, an old hat, or a piece of a garment. In the
country the windows have commonly wooden shutters, except in
the poorer cabins, where the window is stopped, if at
all, with straw or old rag. In the less evi-

privies, and very few of them have pipies or any other
inhabitants whatever. The pig, where one is kept, sleeps
in the cabin. The cost of building a cabin is from 3s. to 4s.
for the common ones, and from 5l. to 6l. for the
best. The number of the labourers building his own cabin, has been about
10s. a year less for his land than he would if the cabin
was built for him.

The cabins generally contain a rough bedstead or frame,
propelled up on blocks of wood or stone, or for those
rich with hard beds. The floor is not paved, and other
inmates, if any, sleep on the ground. In the poorest
cabins all lie on the ground. The bedding consists in
the best cabins of a tick filled with stuff; but in the common
cabins the bedding is chiefly of straw or rushes, heath,
fem, or moss, with a piece of backing, a bail wrapper, an old cloak, or other clothes thrown over it. The covering in the better cabins consists of one or two blankets; that is, most always old and thin; often, in others, of a single blanket and quilt; and, in the most wretched, of a coverlet formed of the remains of an old blanket, carpeting, old clothes, or rags, stitched together or separate. The best cabins have three or four clean or good sloots, a table, a small dresser, with a little stock of plates, cups, saucers, and mugs, a few tin vessels and pans and pots for water and cooking, a chest or box or two for clothes, etc., and a tub or two for potatoes or meat. The poorest class have none to little stock, a shabby table, one broken cup or mug, an old tin can or cracked pitcher, and a pot to boil potatoes. Children usually sleep with their parents till 12 or 13 years old, unless the number be too great; when there is a sufficient covering for a separate bed. Only two or three of the younger ones sleep with their parents, but where there is a want of covering, as many as five or six sleep with them. The crowded state of the cabins and the destitution of the inmates perpetually lead to a neglect of the decencies of life, which are less attended to than in some other counties where an equal degree of wretchedness prevails.

The clothing of the labourers is very bad: about one-third of the population who are of age to attend public worship, wear from three to six or eight 'shirts' (from the front of the breast to the waist) without a shirt of any kind. The women and girls, from the cheapness of printed cotton, manage usually to get an outer garment, but are much in want of under-clothing. They have perhaps only one shawl among them, and take it in turn to go to chapel. There is generally the constant feeling of being barely sufficient for decency, and utterly insufficient for warmth. The use of shoes and stockings is decreasing every day among the women and children; the men must have shoes to dig with, but they are commonly very old. Their common fuel of the cottage is turf, which is dear except near the bogs. When the labourers are unemployed, they collect heath and furze, which they cut on the mountain. Many of the proprietors do not permit this, as it diminishes the game of cover. The poorer labourers, whose land is being barely sufficient for decency, and utterly insufficient for warmth, have no other clothing than their old clothes, stubble, or dried dung. Insufficient fuel to counteract the dampness and coldness of the climate is considered to be one cause of the early decline of the labourers' health and strength.

The destitution of the occasional labourers obliges them to resort to many shifts for what are commonly deemed necessities. They wash with rain-water to save soap, and for candles use rushes dipped in fat. Yet amidst all this poverty the greater part of the labourers smoke, and many pock in every family. An assistant-commissioner remarked an almost universal inattention to cleanliness, and what is in other countries considered decency of appearance, both in house and person; but in extenuation of this the want of early training and of all education was stated, and it was suggested that the latter must be taken into the account. Habitual drunkenness is not common; when it does occur, it is found among the tradesmen and small farmers; labourers cannot afford it, and very rarely drink spirits. The farmers drink milk, beer, and, on particular occasions, spirits.

**Divisions, Towns, &c.—The county is divided into eight baronies or half-baronies, as follows. The population is from the census of 1861.**

<table>
<thead>
<tr>
<th>Barony and Position</th>
<th>Area</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arkwlow</strong></td>
<td>B.E.</td>
<td>12,055</td>
</tr>
<tr>
<td>Ballincollig, North</td>
<td>Central</td>
<td>7,321</td>
</tr>
<tr>
<td>Ballincollig, South</td>
<td></td>
<td>24,230</td>
</tr>
<tr>
<td>Bandon</td>
<td></td>
<td>62,989</td>
</tr>
<tr>
<td>Bandon (Held)</td>
<td></td>
<td>42,488</td>
</tr>
<tr>
<td>Caherdaniel</td>
<td></td>
<td>11,486</td>
</tr>
<tr>
<td>Clonakilla, Upper</td>
<td></td>
<td>9,082</td>
</tr>
<tr>
<td>Clonakilla, Lower</td>
<td></td>
<td>9,282</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>26,083</td>
</tr>
</tbody>
</table>

An examination of this table will show that the population is most condensed in the baronies of Arklow and Rathdown, where it gives rather more than one inhabitant to every three acres, and Shillelagh, where it gives rather less than that proportion. In Newcastle and Upper Talbotstown the proportion is rather more than one inhabitant to every three acres and a half; in Lower Talbotstown it is rather more than one to every six acres; but in Ballincollig, rather less than that proportion. The least populous districts are overspread by mountains; but it is remarkable that Rathdown and Shillelagh, though among the most populous, are mountainous also.

The county of Wicklow contains the county-town of Wicklow, the market-towns of Arklow, Ballyntegal [Arklow; Ballyntegal], Blessington, Bray, Carnew, Dunlavin or Dunlavin, Rathdrum, Stratford-upon-Slaney, and Tintern or Tinnerly or Tinahely; the post-towns of Anna- ghy and Forrestown, Donard, Delgany, Newtown-Mount-Kennedy, and Newbridge; the former city of Glendalough or Glendalough; the decayed and disfranchised borough of Carysfort or Carnesfort; and the villages of Bollinlea or Bollinlea, Donard, Kilcoe, Rathnew, or Newrath, and Red-cross.

The county-town of Wicklow is partly in the parish of Kilpoole, partly in the parish of Drumkay, both in the barony of Arklow; and partly in the parish of Rathnew, in the barony of Newcastle. Wicklow is supposed to have been occupied as a naval station by the O'Connors or Donnachs before the Anglo-Norman invasion; and some would derive its name (which was antiently written Wykinglo, Wy- kenloe, or Wykinglogh, and is interpreted to mean 'the lake of the north') from the district of the county. The Anglo-Norman invaders, beginning to build a castle here, but it was not finished at that time. In A.D. 1310 the town was burned by the Irish. In 1375 the castle was put into a state of defence by one of the Fitzwilliams, in whose tenure as lord it was of great importance. The county-town, in the early part of the sixteenth century the castle and town were occupied by the native septs of the Byrnes, but were soon afterwards surrendered by them to the English government. In the civil war of 1641 the castle was besieged by O'Toole, one of the Irish insurgents, but the siege was raised by Sir Charles Coote.

The town is situated on the south-western bank of the river Vartry or Fartry, along which it extends for above a quarter of a mile. The houses are mostly irregularly built, and the streets narrow and ill-paved. At the north end of the town, on a steep rock or cliff projecting into the sea on the south side of the mouth of the river, are the remains of the castle, called Black Castle. These remains are very trifling: they consist of a rampart including a considerable area, a deep ditch cut or dug in the solid rock, within the rampart and at some distance from it, and a flight of steps cut in the face of the cliffs and leading down to the sea. In the centre of the town are the court-house and the police-station.

The old Roman Catholic church, now (we believe) used for a male and a female school, and the new Roman Catholic church. There are meeting-houses in the town for Methodists and for Quakers. Near the south-east end of the town is an old Roman Catholic church, in a station above the town a post-office and a police-station. On the peninsula of the Murrough or Murragh, on the opposite bank of the river, over which there is a bridge, are a race-course and stand, and some baths. The harbour is formed by the mouth of the river; it is considered capable of being much improved, and made a harbour of refuge for large vessels, at a cost of about 35,000l. Vessels drawing from seven to eight feet water can enter at ordinary tides. There are two lighthouses near Wicklow Head and one half south-east of the town; and on a rocky point (St. Bride's Head) midway between the town and the lighthouses, are the ruins of a Roman Catholic chapel, and near it a cave in a cliff.

The population of the town in 1831 was 2472. The market is on Saturday, for meat, and is held in the market-house which, with the market-place, is in the eastern part of the town. There is no regular market for corn; but the town has the largest corn-trade of any town in the county:
average yearly sale, in the ten years from 1826 to 1833 inclusive, was 450 barrels of wheat, 15,066 barrels of barley, and 21,880 barrels of oats; part of the corn and some copper and lead ore are exported; and coal, culm, limestone, timber, and iron are imported. Four small vessels of from 35 to 100 tons and some small craft belong to the port.

Wicklow was incorporated by charter of 11 James I., and sent two members to parliament before the Union; it was in the patronage of the Tuche family, who received at the Union the


diocese of Dublin and its parishes, and in the

burgh of the same county.

The Union of Wicklow is in the diocese and ecclesiastical province of Dublin. The population was estimated at 10,799 in 1831, and 11,523 in 1834: nearly one-fourth of the population belong to the Established Church: the others are almost entirely Roman Catholics. There are churches and

at Killassery and Glenealy in the Union, with congregations of between 300 and 400, taken together; and a school-house at Rathnew, licensed for service, is attended by 20 or 30. There are the Roman Catholic chapels (at Wicklow, Glenealy, and Killassery), with joint congregations of about 3000. The gross yearly value of the benefice (a vicarage) is 512l. 10s. 8d., the clear value 372l. 11s. 10d. It is in the diocese of Dublin. The rectorial tithes of the Union are assigned to the benefice of Wicklow. The Dublin cathedrals, except a small portion held by a lay impropriator. They were in 1835 twenty-seven schools (twenty-five and two Sunday-schools) in the Union, with 882 children (400 boys and 472 girls) on the books of the day-schools: two of these (with 87 children) were national schools; the others (with 41 boys, 57 girls, and 70 infants, or young children, respectively) were supported by subscriptions; another (with 28 boys and 16 girls) was in connection with the London Hibernian Society; seven others were chiefly supported by benevolent individuals, and the rest were private schools. There was no school for superior education in the Union.

Blessington or Blesington, is in the last-parish of Lower Talbotstown, nearly 16 miles south-south-west from Dublin. The parish is a large area of 15,780 acres 3 roods 7 perches, and had in 1831 a population of 2182, about two-thirds agricultural. The town consists of one street, which, had in 1831, 51 houses, inhabited by 69 families, comprising 426 persons. In the middle of the town the street is widened and forms a market-place. The market-house and a considerable hotel are in the market-place. The church, a handsome modern building capable of accommodating two hundred persons, has a lofty square tower, stands in the churchyard, is about the market-house, and near the parsonage-house and a school-house. There is a police-station in the town. There is a weekly market on Thursday, and three yearly fairs. Immediately adjacent to the town is Blessington demesne, formerly the residence of the masters of the Dublin Union. The sale of serges in 1798, and still remains in ruins. Rusborough house, the seat of the earl of Miltown, Russellstown house, Ballyboys house, and Buggagomoyle cottage, are in the neighborhood in the adjoining parishes of Burgess and Ballyboys. Blessington parish is the head of a union in the diocese of Dublin, comprehending the parishes of Blessington and Burgess, which are united in one vicarage; and the vicarages of Killbride and Ballytown, or Ballyboys. There is a church and school in the Union, but in Blessington and one in Killbride parish, capable of accommodating 100 persons; and three Roman Catholic chapels, one at Killbride and two at Ballyboys. The clear yearly value of the united benefice is 265l. 6s. 9d. There were in the parish of Blessington in 1835, six day-schools, namely by Civil schools and two schools partly supported by the marquis of Downshire; and in the whole Union eighteen day-schools (nearly all of them hedge-schools) with 552 children (300 boys and 252 girls). Blessington has incorporated the charter of Charles II., and returned two members to the Irish parliament; but it was disfranchised at the Union, the marquis of Downshire, the patron, receiving 15,000l. compensation, and the corporation has since fallen into disuse.

The barony of Rathnew, 97 miles west by north of the county of Dublin on the Wexford mail road. The parish has an area of 2955 acres 3 roods 34 poles; and contained in 1831 a population of 3499. The town, or that part of it which is in the county of Wicklow, stands on the south side of the river Dargle, and consists of a long street leading up from the bridge over the Dargle, along the Wexford road, divided at its upper end into two branches, one continuing along the Wexford road, the other leading off to the right towards Bellevue and Kilmacanoge: it contained, in 1831, 412 houses—427 inhabited, 19 uninhabited, and 1 building, with a population of 501 families, or 2580 persons. That part of the town which is north of the Dargle is in the barony of Rathnew, the largest town in that parish and county of Dublin; and had at the same time 227 houses, namely, 193 inhabited, 24 uninhabited, and 10 building, with 269 families, or 1186 persons; making a total in the town of 675, which was named, with 11 building, with a population of 710 families, or 3756 persons. Bray is resorted to as a watering-place, chiefly from Dublin, being recommended by its easy distance and the romantic scenery adjacent to it. The streets are neither paved, nor lighted, but the road is neatly kept, and the houses, though not regular, are neat. Many of them are built and fitted up to be let in the season. The church is near the bridge; and there are in the town a Roman Catholic chapel (besides one in Old Connaught parish, on the Old Dublin road, of the Presbyterian meeting-house, an infant school-house, another building for a school and a savings-bank, a police-station, and a fever hospital, formerly a barracks. The trade of the place is not great; a small manufacturer and baker, and a gentleman, and some coal, timber, slates, and limestone imported, the mouth of the river forming a small haven with a bar at its entrance. There is a brewery and a water-mill in the town. There are two markets, one on Tuesdays and Fridays, and another on Wednesdays and Saturdays. There are fairs in the year, some for cattle, others, which are attended by traders from Dublin, for fowlers. The average yearly sale of corn in the ten years from 1826 to 1835 was 416 barrels of oats; not any wheat or barley. A number of fairs is held about two months before the harvest, and the rest of the year. The population of Bray is 2866; the Wexford portion, of 4073—from two-thirds to three-fourths agricultural. The town is on a crossing road, and consists of one principal street called in different parts Carmel Street and Wolf Green, running directly to the north, and Mill Lane to the south; the number of houses in 1831 was 111, namely, 122 inhabited, 4 uninhabited, and 4 building, with a population of 121 families, or 826 persons. There is a castle which has been built by the church from Dublin to Wexford, but which has since been roofed and repaired. The church is a handsome building with an embattled tower and spire: and there is a dispensary, a post-office, a restaurant, and a school-house for boys and girls. There is a flour mill and a tannery manufactured, there is a school for boys and girls, and near the town, a corn-mill and a stone-quarry. There is a market on Thursday, for pigs, potatoes, and poultry; and there are fairs, four of them considerable; one in the castle, where the houses of Fenners, and it is open the yearly value of 70l. 4s. 7d. There is a chapel-of-ease in the village of Shillelagh. There is a Roman Catholic chapel in the parish. There were in the
parish, in 1835, six day-schools, with 519 children, namely, 263 boys and 183 girls: the four largest schools were all conducted by Lord Fitzwilliam.

Dublin City contains, without the rest of Dublin, in the half-barony of Lower Tallaghtown. The parish extends into the half-barony of Upper Tallaghtown, and consists of two principal streets, the letter T, and consisting in 1831 of 161 houses—155 inhabited, 3 uninhabited, and 3 building; with a population of 365 acres, 2 roads 21 poles, with a population in 1831 of 2529. The town is on one of the roads from Dublin to Timoleen and Castle Domett, and consists of two principal streets, like the letter T, and consisting in 1831 of 161 houses—155 inhabited, 3 uninhabited, and 3 building; with a population of 365 acres, 2 roads 21 poles, with a population in 1831 of 2529.

The market is on Wednesday, for corn and potatoes: the yearly sale of corn on the average of the ten years 1826-36 was 380 barrels of barley and 12,396 barrels of oats; not any wheat was sold. The town is the head of a Union in the diocese of Dublin, comprising several parishes: the clear yearly value of the united benefice is 543l. In the 142, with a glebe-house. There are two Roman Catholic churches in the Union, one very small. There were in the Union in 1831, 622 children, 539 of whom were in 22 schools. These schools had 334 children, namely, 163 boys and 171 girls; one was the parochial school in connection with the London or Hibernian Society, supported partly by a donation from that society, but principally by private subscriptions; it had 366 scholars, and 230 were not supported by the bounty of an individual. The Sunday-school was held in the church, and was for scriptural instruction; it was attended by from 25 to 30 boys and 45 to 60 girls.

Rathdrum is in the barony of Ballinacor North, 23 miles by road, 20 by tack road, from Dublin to Wexford. The area of the parish is 53,155 acres, 2 roads, 22 poles. The population in 1831 was 6263, about two-thirds agricultural. The town is near the right or west bank of the Slaney, about which there is a bridge, and is the most important street from the main street, having in the course of it two large open spaces, one an oval, the other a square, which latter the main streets cross diagonally: there are two or three smaller streets branching from the main street, and leading into the open spaces. The town comprehended, in 1831, 105 houses, namely, 101 inhabited and 4 uninhabited, with a population of 151 families, or 532 individuals. It contains the district church of Rathbran, a neat structure erected in 1825; a Roman Catholic chapel, and a Presbyterian meeting-house. Near the town, on the bank of the Slaney, are a cotton print-work and a bleach-mill; and near the Little Slaney, which falls into the Slaney near the town, is a fever hospital.

Stratford is the seat of a considerable manufacture of printed cottons, which, with the woollen manufacture, employed, in 1831, 177 men, namely, 150 in the town and 27 in the other part of the parish, beside women and children. The market is on Tuesday and Friday. The ecclesiastical district of Rathbran is in the parish (reery) of Baldinglass: the perpetual curacy is of the clear yearly value of 98l. 14s. 11d., arising partly from glebe, but chiefly from an endowment by the late Earl of Aldborough, augmented in 1831. There were in 1835, six day-schools, with 265 children, namely, 160 boys and 125 girls; and one Sunday-school, with 43 children, namely, 20 boys and 23 girls. Of the day-schools, one with twelve boys was a classical school, the rest were here-schools.

Tinahely, or Tinahely, or Tinnahalley, is in the parish of Kilcolman, in the half-barony of Ballinacon South, about 52 miles south of Dublin. The area of the parish is 12,973 acres, about 5400 being arable, 4050 forest, and 3523 waste. The town was destroyed in the insurrection of 1798, and has since been newly rebuilt. It is near a stream flowing into the Green Island or Shillelagh, or Derry river, and consists of three streets meeting in the market-place. There are three houses, nine shops, and 2 to 2 uninhabited; with a population of 111 families, or 375 individuals. There are a considerable water-mill for corn, a market and court-house, a police-station, a post-office, and a dispensary. There is a market on Wednesday, and two or three annual fairs, with two churches, one Roman Catholic and one Presbyterian.

The church is a half mile south of the town, and a Roman Catholic church is a mile to the east-south-east. At Coolcru in the neighbourhood are the remains of a mansion commenced by the late Earl of Stratford. The parish of Kilcolman has a rectory, forming part of the union of Crosspatrick, in the diocese of Ferns: the union is of the clear yearly value of 579l. 6s. 5d. There were in the parish, in 1835, only two day-schools, with 175 children, namely, 71 boys and 104 girls; and 1 Sunday-school, with 476 persons. It is on the right bank of the Avonmore, over which there is a bridge, and has a neat Roman Catholic church, a post-office, and mill. Close to the village is a handsome monument of the late Mr. David Leask.
glen-house, and a school-house. The post-office is a little distant from the village, adjacent to the magnificent demesne of Belveroe, in the Glen of the Downs, the seat of the Lateuche family. Enniskerry is in the parish of Powerscourt, in the half-barony of Rathval, 13 miles from Dublin, on the south side of the Cookstown river, which joins the Dargle. It had, in 1831, 703 acres (69 inhabited and 1 uninhabited), with a population of 98 families, or 497 persons. There are an infant school-house, a police-station, and a post-office. Several respectable families are resident, and the romantic scenery of the neighbourhood renders them attracted to the village of Glenoe, for there are good hotels and lodging-houses. The adjacent demesne of Powerscourt, with its spacious and splendid mansion of hewn granite, is the residence of Viscount Powerscourt. The apartments are vast, and in its large rooms a number of elegant paintings, and the grounds are of almost unequalled beauty. Near Enniskerry are the demesne and house of Tinnehinch, which were purchased by the Irish parliament and presented to the late Henry Grattan as a memorial of his benefactions. The house is in the barony of Newcastle, between 5 and 6 miles from Wicklow. The village had, in 1831, 29 houses (28 inhabited and 1 uninhabited), with a population of 30 families, or 103 persons. In it are the parish church, a Roman Catholic chapel of ease, a national school-house, and a school-house. Newtown-Mount-Kennedy is in Newcastle Upper parish, in the barony of Newcastle, 22 miles from Dublin, on the main-road to Wexford. It had, in 1831, 123 houses (121 inhabited and 2 building), with a population of 520, or 170 persons. It is no longer a market, but it is now discontinued, and the market-house is used for a school-house. There are still several yearly fairs. A chapel-of-ease to the parish church, a police station, and a post-office are in the village; and a large and handsome park is the property of the gentlemen of Dunraven. Newbridge is in the parish of Castlemacadam, in the barony of Arklow. It has been noticed in our description of the scenery in the vale of Ovoca.

Glenoe is in the parish of Derrylossary, in the half-barony of Ballinacor North, 31 miles from Dublin by the military road. The name is properly applicable to the secluded valley already described, in which the ruins of this ancient city stand, and appears to be identical with Gleunoe, or name of the river which drains the valley. In this valley St. Coemgena, or Kevin, or Kevin, a young man of noble birth, born A.D. 408, took up his abode, and afterwards founded an abbey, under the invocation of St. Peter and St. Paul, on the site of which is now described as Abbeyhouse. He died A.D. 618, aged a hundred and twenty, and his festival is kept on the 3rd June. The abbey suffered much in subsequent years. It was burned once or twice by accident, and repeatedly sacked or burned by the Danes or others. No trace of these dispositions in the glen went on increasing, and the jurisdiction of its bishops extended even to the walls of Dublin. About the middle of the twelfth century the religious began to desert the place, and the sea was united, A.D. 1214, to that of Dublin, in the reign of King John; and it is said, as it was affirmed, of the purpose of Cardinal Papillon, papallegate in the reign of Henry II. It is stated in a contemporary record of the union of the two dioceses by the archbishops preserved in Warre's History of Ireland, that the place had been deserted for nearly forty years past, so that 'from a church (says the record) it has become a cave of robbers and a den of thieves: and more murders are committed there, through the lonely and wide solitude, than in all the other places in Ireland.' In the same record the bishop of Glendalough before the annexation is termed, rather slightly, a certain rural bishop ("quemdam coreiscopum"). The see however continued to exist, either by usurpation or papal appointment. The bishops were succeeded by Denis White, last titular bishop, resigned his claims A.D. 1491, and the see has been ever since indisputably united to that of Dublin.

The ruins of many of the ecclesiastical buildings remain. The ruins which are the ruins of the priory of St. Peter and St. Paul, otherwise the priory of St. Saviour, on the south side of the united stream of the Glenoe and Glenadosa; the priory has been a building of more elegant design and richer embellishment than any other building in the valley; but the remains are very imperfect. On the opposite or north side of the stream, a little more to the west, are the ruins of Trinity Church, sometimes called Ivy Church, from its being overgrown with ivy: the nave and chancel remain; between them is a semicircular arch; and there are the remains of a round tower or belvedere joined to the church. A short distance in the west of Trinity Church is a small paved area, said to have been the market-place of the city, with a base of masonry on which the market cross is said to have stood. The market-place is on the northern, or rather north-eastern side of the river Glenadosa, just above the junction with the Glenoe; and though this from the lower paved causeway, the remains of which may be traced in several places, formerly led up the valley of Glen-danas; traces of a road leading up the valley of Glen-dales are on either or both sides. To both these roads the name of ' St. Kevin's Road' is given, and at the end of the market-place the river Glenadosa is crossed by a ford and by stepping-stones: there was antiently a bridge; and opposite to the market-place, on the south side of the ford, are the ruins of the cathedral and of several other churches. The ruins of the cathedral, of what is called the Priests' Church, of a 'Clothetheach' or round tower, and of several crosses, are in an enclosed burial-ground. The remains of extensive due are ministered by a gateway with a semicircular arch. The remains of the cathedral consist of parts of the nave and choir: the nave was 48 feet long by 30 wide, and was united to the choir by a semicircular arch, now fallen down. The semicircular arch of the choir to the north is of excellent moulding, and having on its impost sculptures of some of the traditionary adventures of St. Kevin, and three windows on the south side of the nave, remain: none of them appear to have been glazed; and the east window of the narrowest nave is of a triforium. In the south wall, so that on the outside it is a mere spike-hole. The western doorway is also standing. What is called the Priests' Church, or the Priest's House, is described by Lefebvre as a small and only vestigial structure remains. The crosses in the grave-yard are mutilated: one of them, formed of a single block of granite, and neatly sculptured, is supposed to be the market-cross, removed from its base in the market-place. The round tower is in the north-west corner of the churchyard; 18 feet high, the walls being entire, with a circular band of coping on the top, but the conical roof or cap is gone: the base is 52 feet in circumference; the walls are four feet thick. There was formerly the stump of another round tower not far off. In the north-west corner of the churchyard is a small round tower, or belvedere, covered in with a conical cap rising 45 feet from the ground, similar to those of the ancient round towers. The roof of the church is a high ridged roof externally, rising 3 feet from the ground: at the west end of the church is a small chapel of somewhat later date, with a roof of lower pitch: the chapel was used for worship not many years since. The sites of two other churches may be traced in this area adjoining the churchyard. A short distance westward and northward of the cathedral, but not in the adjacent churchyard are the ruins of Our Lady's Church, a small building of more ornamental character than most of the others, covered with ivy, from which circumstance it is sometimes called 'Ivy Church.' Westward of this church, and on the north side of the valley, are the remains of stone crosses and two or three small earthen forts; and on the south-east side of the upper lake, on the bank of the Lugduff Brook, which flows into it, in the midst of a plantation, are the ruins of a small Church, partly concealed by the growth of the church of the sept of O'Toole. On the south side of the church is a stone with an inscription now illegible, but said to record the interment of one of the O'Toole, who d. A.D. 1853. There are some fragments of stone cross noted this church. On the south side of the same lake are the ruins of another church called 'Templeeniskellig,' otherwise Tayballa-Skellig,' otherwise Dysart-Kevn. Close to the church, in a rocky projection from the mountain which here skirts the south bank of the lake, is an ev
The educational statistics of the same unions and parishes, according to the return made to parliament in 1835, were as follows:—

<table>
<thead>
<tr>
<th>Diocese</th>
<th>Schools Boys</th>
<th>Girls</th>
<th>Total</th>
<th>Scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin</td>
<td>162 3650 3565</td>
<td>230 776</td>
<td>91 2900</td>
<td></td>
</tr>
<tr>
<td>Leitrim</td>
<td>46 1033</td>
<td>686</td>
<td>1290</td>
<td></td>
</tr>
<tr>
<td>Ferman</td>
<td>22 975 696</td>
<td></td>
<td>1661</td>
<td></td>
</tr>
<tr>
<td></td>
<td>220 6665 5535</td>
<td>210</td>
<td>12401</td>
<td></td>
</tr>
</tbody>
</table>

Wicklow is in the Leinster circuit: the assizes are held at Wicklow, and general sessions of the peace are held there and at Baltinglass. The county-gaal at Wicklow was till lately utterly inadequate in respect of accommodation. For an average of 60 to 70 prisoners (including females and debtors) there were only 32 small cells, 5 day-rooms, 4 yards, a chapel not sufficiently divided and 3 rooms used for an hospital. Large grants have however been made by the grand jury, with the consent of the cess-payers, in order to make the required additions. The prisoners wear a prison dress, and are employed at stone-breaking and net-making, and occasionally at various trades, and a good school is carried on by the turnkeys.

There is a tread-wheel for hard labour sentences. The number of prisoners are closed and dividend-keepers are elected under a matron and deputy, who give them instruction and occasional employment. The whole prison is remarkably clean. ‘The Board of Superintendence meet monthly, and take benevolent interest in the welfare of this establishment; the local inspector is a good man and a religious, and the governor attends to his duty; and the duties of chaplain and medical officer are performed with zeal and attention.’

(Inspectors of Prison Nineteenth Report.)

The county of Wicklow, in the province of Leinster, was also inadequate until within the last two or three years, when an addition has been made to it: there are now 13 cells, 4 day-rooms, 4 yards, with a small hospital, which is room enough for the average number of prisoners, except at session times. It has a keeper, matron, and turnkey; but at the time of the Twentieth Report of the Inspectors of Prisons (Parl. Pappers, 1842) very little in the way of discipline or instruction had been attempted. Some school instruction had been given, but it was doubtful if it had been regular, and there was no chaplain, nor was there any provision for religious instruction.

The criminal returns for 1841 give the number of committals for trial at the assizes or sessions at 254; the number of summary convictions at petty sessions, 112; and the number of persons committed for new trials, 14. These returns were lower in all respects than for any other county. Of 254 persons committed, 131 were convicted, 20 acquitted on capital offences; and 123 were acquitted or discharged.

The county is in the district of the Richmond diocesan in Dublin. The religion is generally Roman Catholic and Baltinglass; fever hospitals at Arklow, Blessington, Bray, Enniskerry, Newtown-Mount-Kennedy, Stratford-on-Slaney, and Wicklow; and dispensaries at Arklow, Aughrim, Blessington, Baltinglass, Dunleary, Enniskerry, Kiltegan, Rathdum, Redcross, Sliehalagh, and Timnehely; and one (locality not given) for Delgany and Newcastle.

The grand-jury presentments for 1840 amounted to 27,065 l. 15s. 2d., thus distributed —

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>New roads, bridges, &amp;c.</td>
<td>4232 l. 2s. 5d.</td>
</tr>
<tr>
<td>Repairing roads, bridges, &amp;c.</td>
<td>8999 l. 7s. 1d.</td>
</tr>
<tr>
<td>Erection or repair of court and sessions houses</td>
<td>292 l. 7s. 6d.</td>
</tr>
<tr>
<td>Building or repairing prisons</td>
<td>...</td>
</tr>
<tr>
<td>Police and police-establishments, and payments to wagoners</td>
<td>3675 l. 11s. 4d.</td>
</tr>
<tr>
<td>Salaries of county officers, not included above</td>
<td>...</td>
</tr>
<tr>
<td>Public charities</td>
<td>5305 l. 6s. 9d.</td>
</tr>
<tr>
<td>Repayment of advances to government</td>
<td>867 l. 16s. 10d.</td>
</tr>
</tbody>
</table>

Miscellaneous, not included above | 2129 l. 2s. 6d. |

The county constabulary force, on the 1st of January, 1841, consisted of 1 constable-in-charge (second-rate); 47 inspectors (1 extra-rate, 2 first-rate, 2 third-rate); 6 head constables (1 first-rate, 5 second-rate); 29 constables, and...
169 sub-constables (125 first-rate, 44 second-rate); with 5 horses.

But the Union the county returned ten members to the Irish parliament: two for the county itself; and two each for the boroughs of Wicklow, Baltinglass, Blessington, and Carysford; at present it returns only two, namely, the county members. The number of voters on the register at the end of the year 1832 was 1755; the number on the register in February, 1841, was 1603, exclusive of those who had registered in 1832, and had not since re-registered.

History.—Sir James Ware considers this county, and with good reason, to have been included in the dominions of the Cauet (Kassee) of Ptolemy, to whom assigns also the county of Kildare. He supposes them to have been a branch of the German Cauci. The Slaney was perhaps the modern River Mow (Millow) of Ptolemy; and the Ovoca may be safely identified with the Ooboca (Oobes) of the same writer. In the period antecedent to the Anglo-Norman invasion, the barony of Arklow and the southern part of the barony of Newcastle formed the territory of a branch of the sept of the O'Toole; their country was called Crico-Cuaian, or Hy-Briain-Cuaian. Another part of the county, called Imayle, including a part of the mountains-range, belonged to the sept of the O'Toole; and the western part, called Rannilough (a name which seems to be em- bodied in the parish of Rannafast), on the west side of the county, belonged to a branch of the sept of the O'Byrnes. Another part of the sept occupied the east coast adjacent to the O'Kellies.

The church and monastery of Glendalough formed a consti- tuency; the battle attack by the Danes or Ostmen of Dublin, and was repeatedly sacked or destroyed by them. In the Anglo-Norman invasion (a.d. 1169) the combined forces of the invaders and their ally Dermot, king of Leinster, marched towards Glendalough to chastise the O'Toole, in whose country the city stood, and who had refused obedience to him. The city was taken without resistance, and plundered and burned. In the division of lands among the invaders, Wicklow was assigned to Mahony. In the sixteenth century William de Glendalough was lord of the manor of Glendalough; in 1510 he was a freeman of the city of London; in 1563 he purchased the lordship of the Manor of Achidraw from King John, what is now the county of Wicklow was included in that of Dublin, and was not formed into a separate county until the government of the lord-deputy Sir Arthur Chichester, in the reign of James I., A.D. 1605. The native writers appear to have preserved a precarious independence in the mountains; of which the separate continuance of the bishopric of Glendalough for nearly three hundred years after the attempt of the Anglo-Norman government, with the aid of the pope's legate, to convert the region to the Church of Rome, and to restrain them, but with little effect. During the visit of Richard II. to Ireland (1394-5) arrangements were made for the removal of the native septs and for the establishment of English forces in the mountains, but the project was never carried into effect. In the time of Elizabeth, Pheagh or Feagh M'Hugh, chief of the O'Byrnes, was in rebellion against the government. In 1580, in conjunction with his allies, he cut off a considerable detachment of English forces at Glendalough. In 1596 he was defeated, and in 1597 slain. The natives joined in the great insur- renction of 1641, and were in the sequel subdued by Crom- well in his march toward the south.

In the insurrection of 1798, the insurgents of the county alarmed Lord Tyrconnel and Newtown-Mount-Ken- nedy, but were repulsed. The Wexford insurgents entered the county from the south, but were beaten at Arklow by General Needham and Colonel Skerrett; this was one of the most important actions of the war, as it prevented the insurgents entering from the south, and it was the cause of the death of the Duke of York. The insurrections of 1782 were in the north, near Dublin, and the county suffered but little.

Ordinance Map of Wicklow; Map of Ireland, by the Society for the Diffusion of Useful Knowledge; Mr. Weaver, On the Geological relations of the East of Ire- land to the Geological Structure of Portugal; Edward's Ge- ographia Hibernica; Travellers' New Guide through Ire- land; Sir James Ware's History of Ireland; Harris's Hibernica; Moore's and Leland's Histories of Ireland; Lewis's Topographical Dict. of Ireland; Parliamentary Papers.

WICKLiffe. [Wycliffe.]

WICQUEFORT, ABRAHAM DE, was a native of Hol- land, and was born, it is commonly stated, at Amsterdam, in 1598; but he early left his country and took up his residence in France. In 1626 he was appointed by the elector of Brandenburg his resident at the French court; and he composed that post till 1639. In 1635 he was made Cardinal Mazarin, he was arrested by a lettre-de-cachet, and thrown into the Bastile, on a charge of sending secret intelligence to the government of the United Pro- vinces, and also of being a spy in the pay of other foreign governments. He remained in confinement for a long time and was then released and ordered to leave France. On this he passed over to England, and thence returned to his native country, where the Pensionary De Witt, with whom he had in fact carried on a clandestine correspondence, procured him the appointment of secretaries in the States, or, according to other accounts, of secretary-inter- preter for foreign dispatches. Possibly he held both the offices, or they may have formed only one office. At the same time the duke of Brunswick-Luneburg appointed him his resident at the Hague. It was De Wicquefort's luck however to fall a second time under the suspicion of betraying his trust; in March, 1676, he was arrested and placed in confinement at the Hague, on the charge of being a secret correspondent with the enemies of the States, and in November following was condemned to perpetual imprisonment and to the forfeiture of all his effects. He remained in custody till 1679, when he effected his escape by exchanging clothes with one of his daughters, and fled to Paris, where he lived, however, with that prince because he would not exert himself with more zeal to procure the reversal of the sentence passed upon him by the Dutch government, he left him in 1681. In 1687, he is supposed to have been a prisoner in the island of Jersey. He published a work in 1690, at Paris, in 1659, and in a third edition, which is by far the best, in folio, at Amsterdam, in 1728. This was followed by a translation into French from the Spanish of the embassy of Garcia de Silva into Persia, Ambas- sade de D. Garcia de Silva, &c., &c., Paris, 1667. After his imprisonment at the Hague he published in 12mo. at Cologne a defence of himself under the title of Mémoires touchant les Ambassadeurs, &c., de L. M. P. (meaning, it seems, Le Ministre des Affaires d'Espagne). He translated a letter of the Emperor Leopold to the Prince of Prussia and the Princess of Quenitz, prefixed to a compilation from the papers of the Prince von der Marigny, which he began to write on his return to Holland, in 1659, under the inspection of De Witt. He had both written and printed a considerable portion of this latter work when he was thrown into prison in 1679; but it was first published in a folio volume at the Hague, in 1719. Another posthumous work of De Wicque- fort, entitled Memoires sur le Rang et la Presence entre les Souverains de l'Europe, was published, in 4to., at Am- sterdam, in 1749.

WICKLING, CARL FREDRICH, an eminent practical engineer and writer on hydraulic and civil architecture, was born at Wolin in Pomerania, in 1742. He applied himself so early and so earnestly to the practical study of topography, that when only seventeen he was entrusted with the task of drawing a topographical survey or chart of the duchy of Mecklenburg-Strelitz, which was engraved on nine sheets. His success in this, his first undertaking of the kind, caused him to be employed since early in his career, and to give a complete survey of Pomerania between Belgard and Zamow. From about 1784 to 1788 he was engaged in making similar surveys of their territories for the dukes of Gotha and Saxe-Weimar, and the rulers of some other German states; during which period he also devoted a considerable portion of his time each winter to the study of architecture, as well civil and military as hydraulic and engineering. In 1763 he was appointed engineer in the service of the duchy of Berg, and in 1792 he first appeared before the public as a writer on
professional and scientific subjects, in a work entitled 'Über Topographische Charten,' and his 'Beiträge,' &c., or "Contributions to Practical Hydraulic Architecture and Machinery.' From this time he was chiefly occupied, for many years upon his large work, 'Wasserbaukunst,' to collect materials and information for which he visited Hol-
land, and afterwards France, the latter country together
with his father-in-law, Oberbaurath Rouman, the results
of the researches of which occupied the first volumes of the
following volumes, which were brought out in five
volumes, from 1798 to 1805. This work, which is esteemed
the most complete of its kind, obtained for him a high reputa-
tion not unattended with some advantages, for in 1802
he was called to Paris, in his eighty-sixth year, with an
accession to his income of 2000 florins a salary, and he
was employed to inspect the ports and harbours of Trieste,
Venice, Florence, and other places within the Aus-
trian empire. He returned to Trieste, however, in 1805,
when he was invited to Bavaria, and there became
chief engineer and inspector of roads and canals, which
appointment he continued to hold till 1818, when he re-
tired upon a pension. While actively engaged in his
extensive professional duties, he had not neglected his lite-
rary occupations, one of which was a new edition of his
"Wasserbaukunst;" and now that he was released from the
former, he applied himself diligently to his pen, and under-
took another extensive work of a far more generally
interesting character, his "Theoretisch-praktische Bürgerliche Baukunde," a
general course of civil architecture and its history, in 4 vols.
4to., with a very large folio atlas of plates, 1821-6.

This work is certainly a very valuable contribution to
the literature and science of German Public Works. The
information it supplies relative to the architecture of
Germany, Holland, Poland, Russia, and some other parts
of Europe, in regard to which scarcely anything can be ga-
thered from any other general collection of the kind.
As may be supposed, many of the plates contained in the
first volumes have been often given in various publications,
but there are also a vast many unedited ones, and among them
several original designs by Wiebeking himself. In a work
of so encyclopedial a nature in regard to its subject, repe-
tation is consequently inseparable. The work has been pub-
lished in five volumes. The material contained in the
plates has been greatly bettered, and more
useful for reference, had not the atlas, a huge oblong folio,
opening to an extent of nearly seven feet, been so incon-
tinently large, and quite unnecessarily so, on account of
so many different subjects being introduced into a single
plate. It is also to be regretted that the plates themselves
are inferior specimens of architectural drawing, being, un-
like those in Durand's "Parallèle," executed for the greater
part in such a coarse and loose style, that they are evi-
dently only a "répertoire" of some standing. They are
so incomparably inferior in this respect that the
very great allowance which is to be made for the defects
and deficiencies of a work so comprehensive in its plan as
to exceed the means of a single individual, however well
qualified he may be, is not a sufficient excuse, and which
has collected, and for which he was obliged to depend in
many instances on information received from correspond-
ents, it would now be comparatively easy to improve and
extend what he commenced, and that at a time of life when
most men would be at a loss if they do not extend their
laborious labours. One excellent feature in his work is the his-
torical tables of buildings and architects, drawn up accord-
ing to the respective countries, and although far from com-
plete, and requiring many additions to be made and dates
inserted, it is one of the perhaps more important parts of
his work, and is not likely to be so extended and
exemplified in a separate form.

As to Wiebeking's own talents in architecture, it does
not appear that he ever executed or designed any build-
ings actually erected, a circumstance not particularly to be
regretted, for the works of his first years, which are repre-
sented in the specimens which he has given us, as already men-
tioned, in the work we have just been speaking of; where
one of the designs by himself is for a cathedral, which is
even externally a Corinthian temple, decasyllabic and
perpetrized, discovered however by a range of very lofty and plain
windows within the colonnades; while internally it is in the
Gothic or pointed style. Another design of the same kind
is Gothic within. Greekian Doric in front, and Italian in
character in its side elevations. In others we meet with
large orders applied to façades consisting of several stories,
whereby the windows look as much too diminuitive as the
P. C., No. 1725.
columns do too large; yet, taken independently of the
columns, some of the elevations are of a bold and vigorous
character.

Besides the works already mentioned, he published se-
veral others, his "Theoretisch-praktische Strassenbaukunde," 1808,
and, so late as 1840, one entitled "Analyse Historique et
Raisonnée des Monuments de l'Antiquité; des Edifices les
plus remarquables du Moyen Age, &c." and dedicated to
Queen Victoria of the United Kingdom.
The Chevalier von Wiebeking, as he was usually called,
being knight of several German and foreign orders, as well
as member of nearly all the principal academies and
learned societies in Europe, died at Munich, May 29th,
1842. He was a man of many years, without his
much previous indisposition or the infirmities usually
attending such advanced age. As an instance of longevity
merely, his age is not very extraordinary, but it be-
tween a remarkable degree of useful life which he
credibly maintained, being, namely, that of the family he left at
the age of eighty, and twenty years later, during which
time he was engaged in some useful employment.

The son of these, Carl Wiebeking, is a distinguished engineer, whose first work after his return from France, England, and Italy,
was a bridge near Munich, across the Isar, designed by his
father, and consisting of three arches, each ninety-six feet
in span.

(Endomenosen; Conversations-Lection; Wiebeking, Baukunde.)

WIELAND, CHRISTOPH MARTIN, was born on the
5th of September, 1733, at Oberholzheim, a village in the
neighbourhood of Biberach in Swabia, where his father
was pastor. Old Wieland, who belonged to the Pletzic
branch of the family, was well acquainted with the
ancient languages, and a good philosopher of the school of
Christian Wolf. From Oberholzheim he was transferred
soon after the birth of his son to Biberach, where he died
at an advanced age as senior of the Protestant ministry of
the town. He is best known by his "Berlinische Dinge,
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matters of taste a very favourable opinion of the young author's talents. It has recently been reprinted in the annotations to volumes of his works. In the autumn of 1750 Wieland went to the university of Tübingen, pro-

fessory to study the law, but he occupied himself chiefly with classical literature, philosophy, and modern poetry, and although his professional studies required as much attention as was necessary to enable him to pass his examination, Socrates appeared to him the beau ideal of a man, and he resolved to follow his example. De Bar's 'Epitres Diverses,' which then caused a great sensation in Ger-

man circles, is said to have been the ten most read volumes ( 'Zehn Moralische Briefe,' Tübingen, 1751), which were addressed to Sophia. These letters, which are distin-
guished for humour and delicacy of feeling, are the best picture of the state of his mind at that time. Another di-
diction, the Anti-Odysseus, a production of a few autumn days, is greatly inferior to his moral letters. While at the uni-
versity Wieland showed little inclination to form friendships with the young men of his own age: his great de-
sire was to become acquainted with the chief literary men, and to engage in the improvement of taste in German.
WIELAND

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ease, gracefulness, and harmonious beauty of its style, which the author himself endeavored to improve by study of the Greek; and a poem entitled 'Die Grazier' ('The Graces'); and a notice on 'Die Grazier' ('The Graces') (1770).

In his novel, 'Der neue Amadis' ('The new Amadis'), Wieland endeavored to show the superiority of intellectual over mere physical beauty: a theme which he took up again in his later years in 'Die Grasier' ('The Graces'), and in his novel 'Die Grasier' ('The Graces') (1770).

In 1756 Wieland married the daughter of a Augsburg merchant, who was devotedly attached to him, and with whom he lived for 35 years in almost unparalleled happiness. She bore him fourteen children in twenty years. In 1782 he paid a visit to his friend Amadis, the duchess of Württemberg, and in 1799 he returned to Germany.

When Wieland returned from the south, he purchased land in the neighborhood of Erfurt. He accepted the offer, and discharged the duties of his office with the most honest zeal, but the envy and intrigues of the academic body, to which he was a disgrace that a poet, and an erotic poet too, should be another Wieland in his way. The secret and open attacks that were made upon him, drew forth the humorous poem 'Der Verklangte Amor,' and 'Nachlaß des Diogenes von Sinope' (1770). The success of these works is the last of his erotic poems, and was written to defend that kind of poetry. The latter was composed to defend his own views of human life and of philosophy. The works which now followed had a more serious and philosophical character, partly in consequence of the political events of the time, and partly in consequence of the changing character of the times, among which we must mention the effects produced by the works of Rousseau, and the reforms introduced by the emperor Joseph II. Wieland attacked the doctrines of Rousseau in a small humorous novel entitled 'Die Grasier' ('The Graces'), in the year 1770. His 'Beiträge zur geheimen Geschichte des menschlichen Verstandes und Herzens, aus den Archiven der Natur' (1770).

Another work, which appeared two years later under the title 'Die Kugel von Scherechian,' was a collection of the poems which the rulers of mankind should derive from history.

Wieland was not at Erfurt long without attracting the attention of the Duchess Amalie of Saxe-Weimar. She was a patroness of the arts, and chose Wieland on the recommendation of Dalberg, and also chose Wieland for the position of Neues Amadis, who was a long-time friend of the Duchess, and who had been invited to Erfurt on the recommendation of Dalberg. The position of Neues Amadis was a great honor for Wieland, and he wrote a letter to Goethe, in which he expressed his joy at the news of his appointment. The letter to Goethe was written in a humorous and affectionate manner, and was received with great amusement by Goethe.

In 1772 Wieland accordingly went to Weimar, where he received the title of Hofrat, and a salary of 1000 thalers, which was continued after the cessation of his duties under the name of pension. The kind and honourable manner in which he was received at the court, the attachment of his pupils, and the intercourse with the distinguished men who were already assembled around the duchess, had such charms for Wieland, that he felt at once that he was in paradise. While in Weimar, he had renewed his acquaintance with Goethe, and edited the 'Deutscher Merkur,' a monthly periodical devoted to criticism and matters of taste. Wieland alone edited it from 1777 to 1784, and from 1789 to 1805 in conjunction with the well-known archaeologist Böttiger. Wieland's own criticisms were on the whole neither true nor profound, and when he expended his principles in his letters on his 'Alcestes,' Goethe and Herder rose in arms against him. Goethe wrote his well-known satire 'Götter, Held, und Wieland,' to which Wieland replied in a humorous and witty manner, and with his usual mildness. This affair drew the attention of Wieland's pupils to Goethe, who was subsequently also invited to Weimar, and became the friend of Wieland. The first important work which appeared after Wieland's death was a new edition of his works, undertaken by the inhabitants of the abbey of Abder ('Die Abderiten,' 1773), which the author intended to be an analysis of the errors, contradictions, and singularities in human nature. It was followed by Erastigen ('Pupils') (1803-1805), a collection of the most interesting works from Wieland's earlier works of fiction by a greater earnestness, depth of feeling, and the absence of voluptuous descriptions. The greatest of all Wieland's poetic productions is his epic romance 'Die Abderiten' ('The Abderites') (1773).

After the publication of 'Oberon,' Wieland abandoned the field of romantic poetry, to devote the remainder of his life to the study of the Greeks and Romans, and he formed the design of making all Germany acquainted with the masterpieces of the ancients by a series of translations. He began with a translation of Horace's 'Epistles' (1782, reprinted at Leipzig in 1816, 2 vols. 8vo., and at Leipzig in 1827, 4th edition), which was followed by Horace's 'Satires' (1790, reprinted 1819, 2 vols. 8vo.). Both works are accompanied with commentaries and introductions, which are useful, especially for the history of the period of Horace. The translation itself is free, and it was intended more for the general reader than for scholars, and is more like a modernization than a real translation. The next production was a translation of Lucian (Leipzig, 1788-91, 6 vols. 8vo.), likewise with a commentary. Took's translation of Lucian of Samosata was translated by himself declared his translation of Horace's 'Epistles' and his commentaries upon them to be his best work, and that from which his own individuality could be best recognized. The multitude of Wieland's long study of Lucian are also visible in the following verse, which is a translation of that writer:—Dialogen in Elysium' (1791), 'Göttergespräche' (1791, 4th edition), 'Geschichte aller Völker' (1791).

Simultaneously with these labours Wieland wrote a great many essays for the 'Deutscher Merkur,' which, when collected, filled sixteen volumes of his works. A collection of all Wieland's works was published at Leipzig from 1794 to 1802, in 36 volumes, and six supplementary volumes, 4to., and great and small folios. All the works of Wieland have been revised and there are many liberal and useful additions to them.

In 1770 Wieland was invited to the court of the Saxon Elector, and he took up his residence there in 1798, with his wife and children, and it was here, in the enjoyment of a quiet and patronage, that Wieland produced all the excellence of his character. He continued however to devote the large part of his time to literary labours. From 1796 till 1804 he alone edited the 'Atisches Museum,' and from 1805 to 1809, conjointly with J. Hootingen and Franz Jacob, under the title 'Archiven der Natur.' This journal was chiefly devoted to the illustration of Greek literature, and here he resumed his old favourite and plan of giving to his countrymen a series of translations of the best Greek writers, of which a great many are contained in this journal. Some original works which appeared before this time contained a series of his renewed study of antiquity, such as 'Aristippus und einige seiner Zeitgenossen' (1800-1802), and the small novels 'Kratas und Hipparchia' and 'Menander und Glyciorion.'

Fortune, which had hitherto always been smiling upon Wieland, threw some of its rays upon an old age. After the death of Sophia Brentano, a granddaughter of Sophia de Leorche, who had been living in his house and had been attached to him as a father, he lost, in 1801, his wife. After this event the retreat of Osmannstadt was no more desolate, and Wieland produced the following inscription, by Wieland:

Lob h E Freundschaft umschließt die verwundbaren Seele im Leben. Und die Friedhofsstecke deckt deren gemeines Grab. —

Love and friendship embrase their kindred souls in life, and this common grave covers their mortal remains. —

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On the general character of Wieland we may add the following remarks. Wieland was not a poet of the first order; his peculiar talent consisted in appropriating to himself and further developing that which he acquired from others, though he always impressed upon it the peculiar stamp of his own mind. He never penetrated deep into the nature of man, but rather remained in the happy medium by which he is unrivalled in the light and simulating gracefulness of his productions and the elegance of his style. His philosophy breathes the spirit of Socrates, though not without a mixture of the principles of Aristippus. He did not acquire a thorough and lasting influence upon his contemporaries; but his greatest merit consists in the amount of knowledge, taste, and refinement which he diffused among his contemporaries, and which has been transmitted to their descendants. Moreover it must not be forgotten that it was in the work of Wieland which by a massive claim to Germany to the literature of their own country, and who formed a beneficial counterpart to the transcendental character which Klopstock and his school introduced into German poetry.

Besides the below-mentioned works of Wieland's works mentioned above, another appeared in 1819, known as the City of Bohemia. It is situated partly in a fertile plain, partly on several terraces on the declivity of a mountain which forms almost a semicircle around the town. It is gaily built, and contains 470 houses, partly of wood, with 4320 inhabitants. It is remarkable for its celebrated salt-mine, which extends under the whole town and to a considerable distance beyond it on each side; the mine is from east to west 2000 feet broad, from north to south 600 feet, and its greatest depth is 1220 feet. This bed of salt is said to have been discovered by a shepherd named Wieliczka, in 1220, and to have been worked soon afterwards. It is divided into five levels, one below another; according to Baudant, the bottom of the first is 34, of the second 22, and of the fifth 170 toises, or 1020 feet, below the surface. There are three shafts by which they descend into the mine, two of which are within the town, viz., 1, the Leano, with a width of 400 feet; 2, the Danilevich shaft, which is very pure, and only used without any preparation besides pounding; 3, crystal salt, ozkowa sel—this is perfectly transparent and pure, and is used for the table and in the dye-houses; at Wieliczka, crucifixes and small boxes are made of it; 4, bismuth, which, however, is not taken for the crucifixes, but from 450,000 to 500,000 cwt. in a year. The number of workmen is 800 or 900, none of whom live in the mine; but there are 100 horses that always remain under ground. A labyrinth of passages, often connected at a height of 200 feet above the floor, extends through the several stories. In the new chambers pillars of salt are left standing; in the old chambers the roof is supported by timber, which remains in a remarkable state of preservation, the mine being extremely dry, though it contains sixteen ponds, in several of which boats are used. The great chambers made by excavating the salt are used as salt-magazines, coopers' shops, stables for the horses, &c. Sixty or seventy of the chambers are very large, and are chiefly visited by strangers. Those most worth seeing are —1, the great hall, which is very like a vast Gothic apartment, adorned with slender pillars and wreaths of foliage, and a chandelier 20 feet in diameter; 2, the ball-room, which is still larger; it is adorned with a colossal Austrian eagle, transparencies painted on sheets of salt, several chandeliers of the same material, and used ordinary festivities as a drawing-room or ball-room, and when properly lighted has a most striking effect, like a fairy palace; 3, St. Anthony's chapel, in the Gothic style, heated in the salt, with asalt pavement, and life-size; 4, the Corpus Christi chapel; and, 5, a smaller, very elegantly vaulted hall, in which there is an obelisk of salt with a Latin inscription in gold letters. The magnificence and beauty of the vaulted passages, the vast halls, the chapels with their salt altars, chandeliers, images, and lamps constantly burning before them, strike a stranger with wonder.

In the town of Wieliczka there is a mine-office which has the superintendence of the works both here and at the neighborhood; it also cancels the patents of the glass-makers or, as they are called in our law books, Baron and Frene, have been already noticed under their several heads: the mode of contracting the connection may be found under MARRIAGE, and of dissolving it, under Divorce; the process of the action for the violation of marriage is regulated by the common law and modified by statutes, is treated of under DOWER; and the right derived from the same source to the husband to a life interest in his wife's real estate if he survives her and has had a child capable of inheriting, which may be made for the husband, the wife, and the off spring of the marriage, is discussed under SEPARATION AND J OINTURE; and the nature of the property which the wife has, if not independently of her husband, contaminates which may be made for the husband, the wife, and the offspring of the marriage, is discussed under SEPARATION AND J OINTURE; and the nature of the property which the wife has, if not independently of her husband, contaminates...
ties if she suppresses or falsifies the facts. In criminal
prosecutions founded on injuries committed by either party
on the person of the other, the injured party may be a
witness against the other, or a rival in the composition
of law. The property of both is liable to some modifications
liable to the debts of either, and with the person of the
wife the husband takes the liability to her debts contracted
before marriage; but those debts are only recoverable
directly by the other. The only direct claim of the former
from that responsibility, whatsoever fortune he may have
had with her, excepting that he must apply to the dis-
charge of such debts any assets which are received by
him as his wife's administrator. As the law considers the
wife to be under the protection, and by descent of her husband, it
relieves her from responsibility for offences short of murder
and high treason committed at his instigation—the evi-
dence of that instigation being his presence during the
commission of the offence. For the same reason all deeds effect
for her, or committing her property, are void as not being
vested in her or under the guarantee of certain solemnities
to ensure her free agency. A disposition by a woman of
her property after the commencement of a treaty for mar-
rriage, without the privity and concurrence of her intended
husband, is deemed void, and by descent of her husband, it
will be set aside after the marriage as an injury to her
husband; and by the act 1 Vic., c. 26, passed in 1837, a will
made before marriage is revoked by the subsequent mar-
rriage of the party making it. (WILL AND TESTAMENT.)

If a husband, under the eyes of the civil or ecclesiastical courts, by any voluntary
act of the parties. Thus no deed of separation, unless it
contains an immediate and certain provision for the, wife, and
was, with any intention to deprive her husband of any
benefit, a husband from the liability to provide his wife with
accessories fitting to her rank in life ('the question of fit-
ness being decided by a jury'), or consequently from the
duty of paying the debts contracted for such necessities, if
she has been driven from his house by his misconduct.
On the other hand, a wife cannot recover at law from her
husband from whom she lives apart any allowance which he
has contracted with herself to pay her in consideration of
the separation, if he desires that their union should be
renewed. Nor again is there any answer to this suit brought by either party for restitution of
consequent rights; far less is it an answer to the charge of
adultery committed either before or after separation, for
though 'the ecclesiastical court does not look upon articles
of separation as a bar to the property for the settlement,
but they are not brought as to be considered a bar to adultery,'
(Hagg-
ard's Consistory Reports, i. 143.)

This union may be dissolved, when sought for, bond
side, by either party without collusion with the other, as a re-
course to law. The dissolution relieves the husband of his responsibility
for his wife's debts contracted after the divorce is pro-
nounced, or, in case of his wife's adultery, contracted after
the discovery of the adultery and the consequent separa-
tion. The husband in every case, besides in the absence of
cause, and he has given particular notice to the tradesmen
that he will not pay her debts. Still less is he liable for
debts contracted while she is living in open adultery. On
the other hand, where the divorce is obtained by the party on
account of his wife's adultery, that party and the spirit-
ual court continues on him the duty of maintaining her (if
her separate property will not enable her to live according
to her rank in life) by requiring him to make her an allow-
ance proportionate to the property which he possesses,
the right of the husband to her, in such circumstances,
to an allowance under the name of her estovers; and grants her a writ for the recovery of them; but
this remedy is now never resorted to. (For the usual mean-
ing of the word estovers see that article, vol. x. p. 62.)

As to the general and leading principle of the common
law; but this supposed identity of person, of interest, and
of property by no means involves equal rights.

The theory of the law is, that a husband has over his
wife's personal property absolute control, and over real
property a control modified partly by the general rules of
descent, partly by statute, partly by the decisions of courts
of equity, which always lean to the protection of the wife's
property and the maintenance of any contract or provision
made, whether by her husband or others, for her benefit,
so far as to make her liable to the debts contracted by
her next friend against the husband for injuries done by
the latter to her property or for the recovery of rights
withheld by him. To this end they interpret the Statute
of Frauds, as giving the right, by the interposition of trustees, independent rights to property and contracts,
and as the wife's contract with her husband, in so far
although she cannot take by direct grant from her
husband, she may avail herself of such a grant by him to
suits for her benefit, and generally she may take by de-
ferred absolute or real estate, or by order, or by order
through the intervention of trustees; and may hereafter
be a trustee, and (although that position has been contro-
verted) she may devise her trusts. Again, the common
law vests in her husband not only her personal property
enfranchised by the common law, but real leasehold interests; yet if a settlement has not been
made on her expressly in consideration of her fortune, those
portions of her personal property which consist of securi-
ties for money or beneficial contracts, and her chattels
of value, are her property. For the purpose of recovering
the values of property, no suit will lie against her, or her
wife's property, the court will require him to make on her
a settlement proportionate to the benefit which he derives.
Usually one half of the fund is settled upon the wife and
children, but the court takes all the circumstances into
consideration; especially whether any dependent already
exists: and it will not grant its aid to the wife who
demands a settlement, if she is the born subject of a state
which gives the whole property of the wife to the husband.

The too adultery of the wife deprives her of her equity
(unless she has been a ward of court married without the
consent of the court); but her delinquency will not induce
the court to vest the whole of her property in her husband,
because he does not maintain her. The court will secure
the wife's settlement proportionate to the benefit which
her trust property gives her or the proceeds of the trust;
and it is settled only in such a manner as to the legal
person of the wife and her children.

On the other hand, in case of the cruelty of the husband
or his desertion of his wife, the court will award to her and
her children not only the whole principal, but the interest
of the property in question. On the same principle, if the
husband has been unjustly enriched by the wife, she is
entitled to a settlement of property, for the purpose of
enfranchising her interest, by the court. By the common
law a husband might alienate his wife's real estate, or lease it for
her life or that of the tenant, and she was left to her remedy
if she survived him, or her heir at law had his remedy if
the husband survived: if they neglected that remedy, the
court would make good the settlement, and register it in
the name of the wife, or lease it to her, or her children; but by the 32 Henry
VIII., c. 26, the wife or her heir may enter and defeat the
husband's act. By that statute the lease of lands held by a
man in right of his wife, or jointly with her, is good against
husband and wife; and if it be granted without the consent of
her husband; or for life, but it must relate to a premium less
than the interest; if the lease is less than the interest, but not
by anticipation or in consideration of a fine, it must
reserve a yearly rent to the husband and wife; and
the husband is restricted from aliening or discharging
the freehold rent; and thus his interest is protected.
When the husband receives rent after her husband's death
upon any lease of her estate improperly granted by him, she confirms
that lease. A wife's copyhold estate is forfeited to the
lord by any such acts of her husband as are infamous to the
state (e.g. waste), as destroy the tenant (e.g. to convert it into a freehold), or otherwise deprive the lord
of his rights, as a positive refusal to pay rent or perform
service. But courts of equity will relieve the tenant when
the forfeiture is not without or even with the consent
of the husband. A tenement in the wife's copyhold estate by the husband no longer takes the mode of descent, but the estate was
go to the wife's and not to the husband's heirs. Husband and wife to whom freehold or copyhold estates are given or devised take in entirety, and not as joint tenants; so that neither can alienate without the consent of the other, and the estate will be the wife's if she survives her husband.

A mortgage on the wife's real property during their joint lives and during his life in addition, if he survives her and become tenant by the courtesy; if the wife joins in that mortgage, and recognises it after her husband's death, she will be bound by it; but she may, if she thinks fit, repudiate. Before fines were abolished, her levying a fine rendered a mortgage a good security against her and her heirs; and since the act abolishing that form of assurance, a deed acknowledged by her as the act prescribes effects the same object. [Five or Lands.] A mortgage by a wife of her estate for her sole benefit of her husband, and not to discharge a debt of her own, gives her a right at equity to compensation out of his assets.

Such are the principal rights which a husband acquires in his wife's property, and the limitations of those rights. On the other hand, the law gives to her if she survives him an estate for life in a third part of all such estates of inheritance as he was solely seised of during the marriage, and of the remainder of the marriage might possibly have inherited. [Downs.] That right of dower may be forfeited in various ways, and it may be defeated by a provision for her, made before marriage, in the shape of jointure. [Jointure.] Since the stat. 3 and 4 Wm. IV., c. 105, in regard to the exercise of the London, or of any ecclesiastical province of York (excepting the diocese of Chester), if the husband died intestate, leaving personal property more than sufficient to pay his debts and funeral expenses, is entitled to the furniture of his webinar, and his apparel (window's chamber), or to 50L. in lieu of it if her husband's personalty is worth 2000L.; then the personal estate is divided into three parts, whereof one-third goes to the widow, one to the children, and one (the dead man's) to his administrator. In this last share the widow is entitled under the Statute of Distributions, which also regulates the division of it, to one-third if there is a child, and one-half if there is not. The benefit of this custom cannot be taken from the widow by any fraudulent device, such as marriage of the husband to a third party whilst he was at the point of death; or a gift with a reservation at it should only take effect after his death.

Marriage revokes powers of attorney previously granted by the wife, and disables her from granting them; but it does not disable her from accepting such a power, or from acting on one granted to her before coverture. She may too be attorney for her husband. She cannot bequeath her personal estate by will unless under a power, or with the consent of her husband.

The defeasance of the property of the wife has been already treated under that head. [Separate Property; Partition.] There remains one of the most difficult parts of this subject: the separation of husband and wife, and the effect of deeds made by them either before or after the marriage, in order to avoid the temptation of such an event. The ecclesiastical courts consider all deeds of separation and all covenants in the nature of such deeds to be void. The courts of law however not only regard such deeds, but have even caused a deed made by him with his wife, trustees to pay her an annuity as a separate maintenance in the event of their future separation, with the approbation of the trustees. Whether such a covenant would now be supported by the courts of law is very doubtful. In order to render a deed of separation valid it ought to be made by the husband and wife, with trustees for the latter, and any provision made in it by the husband ought to be for a valid consideration, such as a covenant on the part of the trustees to relieve the husband from the wife's debts or maintenance; so the cruelty, or adultery, or desertion of the husband is a consideration, because the wife might have sued him in the ecclesiastical courts, and obtained alimony. But courts of equity will not interfere to enforce such deeds, though by a strange inconsistency they give a moral effect to the contracts of separation, and direct that maintenance may be made if through the intervention of trouble and indeed in certain rare cases if made between the husband and wife alone. Nor is the adultery of the wife a sufficient answer to her claim to the separate maintenance. It is the man's fault who has the power of providing such a kind of allowance; the more so, because it ceases if the cohabitation is renewed, or is only prevented by the perverseness of the wife. The civil law considers the husband and wife as separate persons; and the ecclesiastical courts, following that law, permit them to be used separately.

(Roper's Law of Husband and Wife, edited by Jacob.) WIFE. (Scotland.) The moveable or personal estate of a husband and wife is under the administration of the husband; according to the phrasing of the law it is called 'the goods in community,' because on the dissolution of the marriage by the death of either party it falls to be divided that if there be issue of the marriage a third, and there be no issue at all, goods go to the beggars of the deceased, whether husband or wife, the remainder being the property of the survivor. During the continuance of the marriage the husband's right as administrator is in all respects equivalent to the general right of the husband, the wife has been acquired by himself or by the wife, it is entirely at his disposal, in so far as that disposal is intended to have effect during his lifetime. His right of bequeathing it is limited by the Scottish law of succession. [Will.] As the husband and wife are in the administration of the property responsible not only to the extent of the goods in community, but personally, for the wife's obligations, whether contracted before or after marriage. Action against a wife for debts contracted before marriage is laid against her, not herself, as the habitant of the goods in community, and while all 'diligence' or execution for attaching property falls on the goods in community, he is liable to whatever execution may proceed against the person. In case of the dissolution of the marriage before execution, the execution will proceed only against the portion of the goods in community which falls to the share of the wife or to her representatives, and will not lie against the person of the husband. No suit can be raised against a married man unless his husband has been made a party. The wife cannot enter into a contract or execution by action against the goods in community, and the person of her husband, unless in certain cases when by general law or by practice she holds an agency. To this effect, under the Act of 1813, 1st Geo. IV., c. 25, any debt the wife incurs for household purposes are deemed against the husband. The husband may discharge himself from responsibility for debts so incurred by suing out 'inhibition' against her in the Court of Session.

The sphere of her authority may be enlarged by her husband trusting to her the management of any department of business, and she will then, as ostensibly authorized to represent him in the transactions relating to the business, render him responsible for the performance of her acts as a principal is rendered responsible for those of his agents. A wife's agency will not extend, without special authority, to the borrowing of money.

Heritable property (a term nearly equivalent to the real property in England) belonging to either party by the operation of the marriage is subject to the right of the husband to grant the lease of his wife's heritable property, to last beyond his own life, without her concurrence. On the other hand, from the date of the proclamation of the banish all deeds granted by the husband to himself or his wife for his lifetime are invalid. The right of administration, including the necessity for his concurrence in the wife's deeds may be excluded, either generally or in relation to some particular estate. The former can only take place if the husband has been adjudged a non compos or of marriage; the latter may be accomplished by the special exclusion of the jus maritii in the title of any estate conveyed to the wife. Every deed executed by a wife is presumed to have been executed under the coercion of her husband, and is reducible as a deed executed under the effect of
force and fear, unless the wife ratify it by oath before a magistrate. On occasion of the ratification, not only must the husband be absent, but the act of ratification must be witnessed by two men.

A separation of married parties may take place either by judicial interference or voluntary contract. Actions of judicial separation proceed before the court of session, which in such cases exercises its consistorial jurisdiction as succeeding to the comity courts during the Reformation, and effects physically or morally injurious on the part of the husband, will justify a judicial separation at the suit of the wife. That the husband insisted on retaining a servant with whom he had held an illicit intercourse before the marriage, is in law a reason for a judicial separation. (Letham v. Letham, 8th March, 1825, 2 S. D., 294.)

In judicial separations at the instance of the wife, an alimentary allowance is awarded to her against the husband, proportioned to his means. When a husband abandons his wife, an alimentary allowance will be awarded to her without a judicial separation. A voluntary separation may take place by mutual agreement, but in such a case as alimentary allowance will not be awarded unless it is stipulated for. It is a woman's power, however, notwithstanding a voluntary separation, to sue for judicial separation if the previous conduct of the husband towards her would justify it, and thus obtain an award of alimony. The husband whose wife is either judicially or voluntarily separated from him is under a duty to settle his estate in such wise that no inconveniences may be suffered by her after the date of the separation. Her own property is liable to execution for her obligations, but not her person, unless her husband be living out of Scotland, in which case it has been decided that a wife transacting business in the name of her deceased husband shall, on the discharge of her debts, distribute the property among her heirs. It has also been held, that where the wife is imprisoned for a crime committed by her husband, the imprisonment does not affect her own property. (Orme v. Differs, 30th November, 1833, 12 S. D., 149.) The husband has the uncontrolled custody of the children of the marriage during marriage. The court of session will interfere for their protection in the event of their cruelty or neglect, and in the event of the husband being absent by desertion or danger of contamination, but not on the ground of a special estate being settled on a child by a third party.

On the dissolution of a marriage by the death of either party, the determination of the wife's alimony, and the property is, whether the marriage was permanent. A permanent marriage is one which has lasted for a year and part of a day, or of which a living child has been born. In the case of dissolution by death of a marriage not permanent, there is a question of accounts. It is alleged, that the property of the parties is, as nearly as circumstances will permit, so distributed as it would have been had no marriage between them been solemnised. In the case of a permanent marriage, the movable property is divided as above stated, the goods of the deceased are settled as to her, and the surplus is settled as to her husband. If there is issue of any real property in which a wife dies intestate, if there have been a living child born of the marriage, and if there is no surviving issue of the wife by a former marriage, the widower enjoys the life-rent use; but if there is no issue of the marriage, or if there is issue of the marriage, the life-rent of one-third of the lands over which her husband has died intestate, by way of Tercer. The distribution of the property, personal or heritable, may be otherwise arranged by annulling the contract, or equivalents to the property to which a party would succeed may be made by the settlements of the deceased.

On the dissolution of marriage by divorce (Divorce), the offending party forfeits whatever provisions, legal or consensual, of an inferior or superior privilege; but forfeits to the husband whatever property she may have brought into the goods in common.

WIFE. Roman. [Marriage. Roman.]

WIGAN, a market-town and parliamentary and municipal borough, in the county of Lancashire, is situated at a distance of 18 miles west-north-west of Manchester, and 188 miles from London. Whitaker says that there was a castle at Wigan in the Saxon period, which became the nucleus of the town. Leland's description in the early part of the sixteenth century is as follows:—Wigan, pauid, as bigge as Warrington, and better buildd. There is one place called kimside the town, surrounded with some artificers, and some farmers. Camden describes Wigan as a ' neat and populous' place. The inhabitants showed great devotion to the cause of Charles 1.; the town was several times taken and relented by the contending parties in which the earl of Derby was engaged. The old streets are irregularly built, but some of the new ones have been built within the last century. The town is well supplied with excellent water under an act obtained in 1761, and is lighted with gas by a company formed in 1823. From its situation on the Lancashire coal-field, the population of the borough has increased with the development of the manufacturing industry: it was 5,069 in 1801, 14,060 in 1811; 17,716 in 1821; 20,774 in 1831; and 25,517 in 1841. The manufactures of the place comprise linens, calicoes, checks, fustians, the spinning of cotton, and other branches, and of the manufacture, a most of which a large number of Irish are employed. In 1790 an act was obtained for making the river Douglas navigable from Wigan to the Ribble, which it enters a few miles above the wide-outlet of the Ribble. The shares in the company were purchased by the towns of Leeds and Liverpool Canal, who substituted artificial cuts for the natural bed of the river. The Leeds and Liverpool Canal, which passes through the town, gives it the advantage of water communication with Yorkshire and Lancashire. The Male and Female River, which includes the south-east branch, is navigable for small craft, and connects with other canals near Wigan. The Preston and Lancaster Railway, by which the branch of railway communication is extended from the southern coast of England and London to Lancaster, passes through Wigan. The town of Wigan has received a charter, the first of which was granted by Henry III. in 1246. The governing charter prior to 1835 was granted by Charles II., and under it the municipal body consisted of a mayor, recorder, and forty burgesses. The Reform Act the limits of the borough remain the same; but it is divided into five wards, which collectively return ten aldermen and thirty councillors. The number of burgesses, or municipal electors, in 1837 was 1200. The number of burgesses and other electors was 3285 in 1851. The expenditure for municipal purposes in 1840-41 was 3185l. The principal items of receipt were 141l. for rents and fines; 225l. tolls and dues; 1430l. borough and gaol rates; 300l. from the Treasury on account of the sum of 3437l. paid in 1827, and 1000l. from the borough treasurer. Wigan returned two members to parliament the 23rd Edward I. (1295), and again twelve years afterwards, from that time to the sixteenth century the privilege was not exercised. Before the passing of the Reform Act the corporation paid the poll tax on its non-resident honorary burgesses, who had a right to vote in the election of borough members. The number of this class of burgesses in 1831 was thirty-four. The other electors were residents within the borough, paying a poll tax of forty shillings each, which was previously paid by the burgesses elected at the annual meeting for the election of mayor; this mayor had the power of admitting every male inhabitant resident in the borough of full age to a participation in the election of the burgesses and the mayor, and was the same in the act of 1831 was only 89. The borough had long been notorious for its expensive parliamentary contests. The Reform Act did not alter the limits of the parliamentary borough, which, as well as the municipal borough, was disfranchised by the Reform Act of 1832. The number of electors on the register in 1833-40 was 532.

The parish church of Wigan is a handsome structure. The living is a rectory; gross revenue 2823l., net revenue 2220l. St. George's church was erected in 1791, and was partly endowed by a parliamentary grant; it is a perpetual curacy; gross annual value 142l., net 118l. The Roman Catholics are numerous, and have two chapels, one of which, built in 1818, at a cost of 600l., and another of which, built in 1829, at a cost of 600l. Several thousand dissenters have these two chapels. There is a free grammar-school, founded in the reign of James I.; but by whom it was first endowed is not known: the value of the various
endowments is now worth 2011 a year. Under an act obtained in 1812, fifteen governors were appointed, who elected a head master and usher: the number of boys is limited to eighty. The Blue-coat School, established by voluntary subscription in 1773, for educating and clothing forty poor children, is now united with the national school, in which about three hundred children are instructed. In 1833 the number of children returned as attending the daily schools was 782 boys and 658 girls; and at the Sunday-schools, 2019 boys and 2430 girls.

The town hall was built in 1720, at the cost of the borough members. In the marketplace there is a large brick edifice, 103 feet by 66, erected in 1816, for the use of the manufacturers on market days: it is called the Commercial Hall, but is in fact a cloth-hall. A dispensary was established in 1738, and a building was erected for the institution early in the present century.

The marketplace was opened in 1821, and in 1842 the number of depots was 1628. A mechanics' institute was opened in 1825. The market-days are Wednesday and Friday, and there are three annual fairs.

The parish of Wigan is very extensive, comprising an area of 27,610 acres, or above 43 square miles. The borough boundary contains 2170 acres. There are besides three chapels and eight townships, whose population, in 1811, was as follows:—Chapels—Billinge (Chapel end), population 1550; a perpetual curacy, value 2317; Hindsley, population 5459; a perpetual curacy, value 1427; Upholland, population 3113, a perpetual curacy, value 1097.

The centre of Wigan is the parish of each of the above lives. The townships are—Abraham, population 1981; Billinge (Hilger end), 712; Dalton, 438; Haigh, 1369; Ince, 2555; Orrell, 2478; Pemberton, 4394; Winstanley, 681. The population of the parish (including the borough) was 25,692 in 1801; 31,481 in 1811; 38,318 in 1821; 44,488 in 1831, and 51,688 in 1841. There are several springs in the parish impregnated with sulphur, which have been useful in scrofulous complaints. At Hindley there is a well which takes fire if a lighted candle be applied to the surface. Haigh, Aspull, and Ince are in the same area. At Upholland, Haigh, Ince, Pemberton, and Upholland, 857 labourers were employed in coal-pits in 1831. At Upholland there was once a Benedictine priory, and the priory church is now used as a chapel-of-ease.

(Baines’ Lancashire; Municipal and Boundary Reports, &c.)

WIGEON, or WIDGEON, Anas Penelope, Anas Pene-
lope, Linn.

Description.—Male.—Forehead yellowish-white; head
and neck rusty-chestnut; face dotted with black; throat
black; breast colour of wine-lees; back and sides striped
with black and white zigzags; wing-coverts and lover
parts white; beauty-spots composed of three bands, the
middle white, the two sides green, and the lateral ones
dark black; capillaries black, edged with white; under tail-coverts black; bill blue, but black at the point; iris brown; feet
ash-coloured. Length 18 inches.

Female smaller than the male, head and neck rusty,
sprinkled with black spots; feathers of the back blackishbrown, bordered with rusty; wing-coverts brown, edged
with whitish; beauty-spots whitish ash-colour; breast and
sides rusty; bill and feet blackish ash-colour.

Young Males resembling the females. In very old
male the yellowish-white of the head does not extend upon
the top of the head, which takes place in the males of a year old; it is only in the old males that wing-
coverts are pure white. (Temm.)

This is the Conard Sifflor of the French; Anistra
flecta of the Italian; Pfeifente of the Germans; Stemel, Helv-eend-vogel of the Netherlanders; Wriaat of the Swedes; Ble, and of the Danes; Whoever, Whin,
Prentice, Féc ather, Where, Paivdew, Where, Battering,
and Yellowbell, of the modern British; and Chievie of the
antient British.

Geographical Distribution.—Lapland, where they are
called Great Ducks, Norway, and Sweden, in all which
days they breed; Iceland, where a few breed. Holland,
where they sometimes breed; Germany, France, Spain,
Italy, Egypt.

Habits, Food, &c.—According to Colonel Hawker, the
wigeon either chose their mates or detached themselves into small trips preparatory to that choice about St. Valentine’s day. The nest is placed among bushes, reeds, or rushes near fresh water, and is formed of the two best vegetable materials in a state of decay, with a warm down
lining from the parents’ body. Eggs from five to eight
smaller than those of a Wild Duck, and rich in colour.
A vegetable diet forms the principal support of the wigeon which not only feeds on aquatic plants, but also on
the same kind of short grass as that on which the goose
feeds as Mr. Waterton has satisfactorily proved, in addition
of other evidence of its grazing habits. (Lucas, vol. iv. p. 172.) The last-named zoologist states that the wigeon procures its food in the day; but it is also a nocturnal fowl.

This species has always been in request for the table, for the price in the Northumberland Book which stood against the bird is one penny. Perhaps no wild fowl is so useful to market in greater plenty. Vast numbers are trapped by the decoys; but the ‘gunner’ contributes no share; not so large a quantity however as he formerly. Colonel Hawker truly says that the wigeon for cost of
shooting is like the fox for hunting—it shows the best
sport of anything in Great Britain. No writer has entered so fully or so well on the subject of wild-fowl shooting—the Colonol; and to his good sound practical book we refer our readers.*
The current through the channel, both with the raising and ebbing tide, is extremely strong.

The most extensive ring of chalk downs is that of the Needles Cliff, which consists of 40° of the most fertile land in the island. It is bounded south by the southern range of downs, north by the central chalk ridge west, east by the boundary of the Medina valley, and the sea to the east. The basin of the Medina, which in general very narrows, forms a central valley.

The southerly range of downs is that of the eastern Yar, alluded to above, which comprises a large portion of the most fertile land in the island. It is bounded south by the southern range of downs, north by the central chalk ridge west, east by the boundary of the Medina valley, and the sea to the east. The basin of the Medina, which in general very narrows, forms a central valley.

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In Whitecliff Bay, the plastic clay and sands form two:

low cliffs perfectly vertical; rounding the cape to the

south, the chalk of the Culver Cliff rises to a great height

at an angle of about 70°, diminishing to about 50°. In Alum Bay, a section, quite

formable, but more extensive and distinct, is exhibited. On the south are the lower strata of chalk and chalk-marl at an angle of about 50° N.N.E., and the gradually

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### WIG 371

#### Field, Township, or Extra-Parochial Place

<table>
<thead>
<tr>
<th>District</th>
<th>Area</th>
<th>House</th>
<th>Persons</th>
<th>Pariah</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Medina Liberty</td>
<td>8,270</td>
<td>361</td>
<td>16</td>
<td>1,010</td>
</tr>
<tr>
<td>West Medina Liberty</td>
<td>2,700</td>
<td>135</td>
<td>4</td>
<td>356</td>
</tr>
<tr>
<td>Total</td>
<td>44,000</td>
<td>3,804</td>
<td>228</td>
<td>9,843</td>
</tr>
</tbody>
</table>

### Notes
- Includes the hamlet of Kittydarford.
- Includes the villages of Westover, Winton, and Piccott's: the entire parish contains 8777 inhabitants.
- The village of Winton contains 8777 inhabitants.
- This returns 14 persons in the pool.
- The entire parish of Northwood contains 8777 inhabitants.
- This returns 21 persons in houses extra-parochial.
- The entire parish of Northwood contains 8777 inhabitants.

### The chief towns are—Newport, Cowes, East and West, Ryde, and Yarmouth.

### Newport
The capital town of the Isle of Wight, is situated in a valley near the centre of the island, on the west bank of the Medina river, which is navigable to Newport. The tide flows nearly to Newport bridge, and carries large vessels of considerable burthen can ascend with ease. The town is built on an easy ascent, and the streets, which are sufficiently wide, cross each other at right angles. It is a very pretty town, well paved, lighted with gas, and clean. The town-hall and market-house form a neat structure, which is said to be very commodious in its arrangements. It was begun in 1814 and finished in 1816, at a cost of 10,000L. The magistrates of the island meet in the town-hall every Saturday, to determine parochial matters, and to commit offenders for trial to the county assizes. The Isle of Wight Institution, which is a public library and reading-room, is a building which is said to surpass the town-hall in elegance: it was built by subscription in 1811. There is also a Mechanics Institute. The free grammar-school is a large stone building, erected in 1819. The conferences between Charles I. and the parliament were held in the school-room, and lasted forty days. There are two assembly-rooms, and a small but neat theatre. The church
was built in 1172, but has been frequently repaired since; it is a large plain structure. There are six chapels belonging to different classes of dissenters. The House of Industry, in the vicinity of Newport, is a spacious building, with 80 acres of land attached to it, divided into fields and gardens, and cultivated by the inmates; in 1640 there were 14 acres of land, not far from the House of Industry, were built in 1768, and were much employed during the war: they have a good military hospital, and grounds attached to them; in 1840 they contained only 34 persons. Parkhurst prison, for juvenile convicts, apart of an asylum, is situated between the town and the Southsea, a parish, containing, in 1840, 319 individuals, and the gaol at Newport 14. The Lunatic Asylum, which is in Carisbrook parish, contained 34 persons in 1840. Thursday is a market day, and is much frequented by persons from all parts of the island, Newport being a central depot, from which corn and other agricultural produce are shipped, and which imports articles of manufacture, coal, provisions, and whatever else may be wanted for the interior and south side of the island. An annual fair is held on Whit Monday, Tuesday, and Wednesday; and at Michaelmas there are three Bargain-Fair Saturdays, when the country men-servants and maid-servants meet at separate parts of the town to be hired, and this is the great season for rustic sports.

Previous to the Municipal Reform Act in 1832, Newport was a municipal and parliamentary borough. As a municipal borough, it consisted of a mayor, a recorder, eleven aldermen, self-elected, twelve chief burgesses, and a number of common burgesses, incorporated by a charter of James I. The governing charter of the borough was 13 Chas. II. By the Municipal Reform Act it has been divided into two wards, with six aldermen, and eighteen councillors. The number of burgesses is 40; that of electors 126. The 1832 act increased the number of burgesses to 50. The number of electors is 2000. The number of freemen is 5000. The number of electors is 120,000. The number of electors is early as 1304, but did not send them regularly till 27 Eliz. 1564. It was disestablished by the Reform Act.

Yarmouth is a large town. The population of the town and parish, according to the returns for 1841, is only 5673. It is situated at the mouth of the river Yare. It has an excellent roadstead, and there is communication by steam-boat twice a day with Lynn regis. It has a market day, and a chapel, and a Baptist chapel. The town and parish are small.

Newport is a small town. The population of the town and parish, according to the returns for 1841, is 7362. It is situated at the mouth of the river Menai. It has an excellent roadstead, and there is communication by steam-boat twice a day with Liverpool. It has a market day, a school, and a church, a dissenting chapel, and a Baptist chapel. The market-town and town-hall is a small structure. The church is large, and of considerable antiquity. It is a corporation which was not affected by the Corporations Act of 1882. The subscription which is in the right of the corporation is 1 Edw. VI. The population of the town and parish in 1841 was 3277. Boat Haven admits small vessels when the tide is in. Sir Isaac Middleton attempted to reclaim the haven from the sea by windlasses. The town and parish are about 93 miles from London. The market day is a Wednesday.
in the reign of Richard II., but the great cause of its decline was the growing importance of Newport. The municipal body consists of a mayor and an indefinite number of chief burgesses, who are self-elected, and of whom the number in 1837 was 23. The governing charter is one granted in the actual establishment of the borough, and New- town was disfranchised by the Reform Act.

History and Antiquities.—The Isle of Wight was con-
cquered by Claudius, A.D. 43. In 406 it was conquered by Teutonic Saxons, who destroyed the original inhabitants, and appointed Govan by their own coun
ners. In 601 Wysta, king of Mercia, subdued it. Not long afterwards it was subjected and compelled to embrace Christianity by Tredwall. In 787, 987, 998, and 1001, it was plundered by the Danes; and in 1082, Earl Godwin, who had been banished by the Irish Chiefs, plundered it. William the Conqueror bestowed it on 
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The title however was not continued, and the last of the Lords was the Earl Rivers, who was beheaded by Richard III. in 1483. During the period that it was held by these Lords it was frequently threatened by the French, but never attacked. When the French were driven away, the Munster of almost the whole descendants was in the reign of Richard II., when they conquered all the island except Carisbrooke Castle, but reduced on receiving 1000 marks from the inhabitants. On the death of Henry VII., Sir Edward Widville, or Woodville, betook himself to the title of the earldom, which lies about three miles from the sea, and the title was held by his successors for a considerable period. The last Captain was the earl of Portland, who was displaced by the parliament, and the earl of Pembroke was appointed Governor in his place. He was succeeded by Colonel Hammond, who governed the island from 1628 to 1641. When the Earl of Clarendon fled to the Isle of Wight after his escape from Hampton Court, he arrived there Nov. 1, 1647. He was not strictly confined at first, but was afterwards, when he made a determined attempt to escape. On one occasion especially, he got his horse, but he would not suffer it to be tied to him, but he drew it back when he found that he could not get his body through. A conference between Charles and the parliament was held in the school-room of the free-lords, and the earldom of Wight came to the parliament. On the 29th of Nov. 1649, he was seized, and conveyed to Hurst Castle. The title and office of Governor of the Isle of Wight is still continued.

The Roman name of the Isle of Wight was Vectis, which persisted as the name of Wight, or Wight, or the county of Wight. In the parish of Yarmouth, about two miles from the sea, there is a church dedicated to those bishops, but there are no traces of Roman forts or camps, or of Saxon warf, Carisbrooke Castle is the only ancient fortress. Its keep is perhaps another to Norman times, but no other part of it. During the reign of the Lords of Wight, whose power and privileges are of the utmost importance, Carisbrooke was the capital of the island, and Carisbrooke Castle was the residence of the Lords. The castle stands on a lofty eminence, and the keep still higher on an artificial mound. Fitz Borne the Norman built the castle, and included the whole tract of land from the sea to the chalky downs, which are about three miles wide. The castle was successively enlarged by subsequent lords. Sir Edward Widville, or Woodville, built the main gateway, which is very handsome, in the reign of Edward IV.: the gate of Woodville appears on its front. There were several other important establishments in the island, but none so extensive as Quarr Abbey, which was founded in 1132. It was dissolved by Henry VIII. It was bought by a merchant from Southam, who swept away everything except some houses of the long walks, which enclosed an area of thirty acres. The abbey has been converted into a no public house, and a few fragments of gables, turrets, and doorways. Carisbrooke Priory is entirely demolished, except the church, which is now parochial. There is a small but very curiously turreted on the summit of St. Mary's Hill. The lower part was probably used as a bury to the church of a hermitage which stood there, and as a part of a lighthouse. It was repaired by Sir Richard Worsley. Some of the parochial churches are perhaps as old as the Norman conquest; some possibly older. Yaverland church is one of the most ancient. The entrance-door is arched, and has what appear to be Saxon moulings of very uncommon forms.

(Voret's History of the Isle of Wight; Sir H. B. Paton, 'The Isle of Wight,' in 'Obe-

In the southern part of the county, and stretches intowards about fifteen miles: the distance between the two headlands of Barrow Head and the Mull of Galloway is about ten miles, and no boat can reach the former without going about ten miles, and the southern point of Scotland. The point of the Mull, on which there is a lighthouse, is a peninsula of about a mile and a quarter in length by a quarter of a mile in breadth. The small island of Wigtown is 2 miles long, which lies about three miles due south, and contains 495 inhabitants. It affords safe and commodious shelter for shipping. Loch Ryan Bay, on the north, extends into the country about eight miles, to Stran-

Wigtownshire formed a part of the ancient province of Galloway, and is sometimes called West Galloway. The aboriginal Keltic inhabitants were not driven out of the country by the Romans, but, although they invaded the province of Galloway, do not appear to have settled there as a colony there. Gaelic was the vernacular dialect of the district until after the middle of the fifteenth century, and was not entirely disused in remote places until some time after the commencement of the eighteenth century. The Roman Catholic church of Galloway, in 1841. The oldest church in Scotland was built by St. Ninian, near the site of the present Whithorn. There were monasteries at Whithorn, Wigtown, Glenluce, and Soulekse; and some ancient castles scattered over the country. Some of the ecclesiastical institutions, though consisting of e

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into Wigton Bay. The river Luce, which falls into Luce Bay after a course of 21 miles from the borders of Ayrshire, is easily crossed on foot, except when floods occur. The other streams of the county are comparatively insignificant. The soil of the Machars and the Rhynies is described as consisting for the most part of a hazily loam, dry, and adapted for the rearing of cattle. There is a tract of rich alluvial land in the eastern part of the county, which extends from the parish of Kirkenmer to Newton-stewart. The Moors are bleak and barren, and in many places covered by peat land pasturage. Out of 286,900 English acres which the area of the county comprises, it is stated in the recent 'Statistical Account' that 101,136 acres, or about 35 per cent., are under cultivation, and 187,324, or about 65 per cent., in pasture. The land is subdivided, in small units under entail, in farms of moderate size, generally for leases of nineteen years. In 1831 there were 820 occupiers of land employing labourers, and 487 occupiers who did not employ labourers. A great impulse has been given to agriculture since 1839, and above 63 square miles. The number of inhabitants is increased. 2539. The course of the river Luce from Stranraer to the royal steamer at the moorings at the entrance of the bay, is about 12 miles, and contains numerous islands, and is freezing during the winter. The river Rhynns, which flows into the river Luce near the town of Wigton, is about 26 miles in length, and is navigable for small vessels. The river Maches or Muck, a stream of six miles in length, flows into the Luce, and is navigable for small boats. The river Luce, in its course, passes through the Kirkcudbrightshire Baronies of Whithorn and Kirkmaldon.**

The town of Whithorn is the county-town, which was made a royal burgh about 1340, and is situated on an eminence about 200 feet above the level of the sea. The harbour is within a quarter of a mile of the town. In his 'Itinerary of the County of Kirkcudbright,' Sir Ralph Verney states that in the middle of the village street a long oblong space has been enclosed and planted with shrubs, evergreens, and forest-trees, and spacious gravel-walks have been laid out, with a bowling-green in the centre. The revenue of the corporation is about £300 per annum. There is a good grammar-school, attended by from 80 to 100 scholars. There is a private bank, and branches of two of the Edinburgh banks. The parish church is an old and mean-looking edifice. In the churchyard there is a monument to the memory of a young man and wife, who were some aged eighteen, and the other sixty-three, who, in 1885, were tied to a stake within the flood-mark and drowned for not conforming to prayer. At the village of Blidenech there is a whisky distillery which concocts 10,000 bushels of malt annually. In 1842 there belonged to Whithorn 20 vessels averaging rather more than 100 tons each, besides several under 50 tons.

The most important harbours are Carty, Wigton, Garlieston, and the Isle of Whithorn in Wigton Bay; Port William on the south side of the town; Portnacrook and Portpatrick, on the Irish Channel. At Carty, which is about a mile and a half below Newton-stewart, vessels of from 35 to 45 tons arrive, and at spring tides those of from 70 to 80 tons can come up. Garlieston harbour was greatly improved by a vote of £3400, raised four years since, and now shelter thirty vessels. The number of vessels belonging to this port in 1833 was 15, of which 4 were each of 100 tons burthen, and the remains averaged 48 tons. Vessels of 100 tons burthen are built here. Portpatrick is the station for the post-office steam-packet to Dungladan, on the opposite coast of Ireland: the distance between the two ports is from 10 to 11 miles. The population has decreased 196 since 1831, and since the introduction of steam-boats the port has been less resorted to. The town is on the Great Southern Green for Ireland. At Stranraer a pier was built about twenty-one years ago, at which thirty large vessels may lie, but they can only come up at high-water. Nearly 40 vessels belong to this port, which average about 48 tons each.

The population of each parish in the county in 1841 was as follows—

<table>
<thead>
<tr>
<th>Parish</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasserton</td>
<td>1253</td>
</tr>
<tr>
<td>Ineh</td>
<td>2566</td>
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<tr>
<td>Kirkcolm</td>
<td>1772</td>
</tr>
<tr>
<td>Kirkcown</td>
<td>1423</td>
</tr>
<tr>
<td>Kirkenmer</td>
<td>1789</td>
</tr>
<tr>
<td>Kirkmaldon</td>
<td>2202</td>
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<tr>
<td>Leavalst</td>
<td>2712</td>
</tr>
<tr>
<td>New Luce</td>
<td>652</td>
</tr>
<tr>
<td>Old Luce</td>
<td>2448</td>
</tr>
</tbody>
</table>

The town of Newtonstewart (pop. 1238), in the peaks of Penninghame, and the town of Portpatrick (586) are each a borough of Barony. Wilberforce, (1860) Whithorn, (1831), and Stranraer (430), are boroughs.

**Wilberforce, William,** was born at Hull on the 24th August, 1759. His father, Robert Wilberforce, was a merchant in that town, descended from the ancient Yorkshire family of Wilberforce; his mother was the daughter of Thomas Bird, Esq., of Barton, in Oxfordshire. His constitution was so weak from his infancy, that in after-life he expressed his gratitude, that he was not born in less civilized times, when it would have been thought impossible to rear so delicate a child. He was however as soon as possible placed at school, of good and useful instruction, to enable him, in the early age of seven, a remarkable talent for eloquence. He commenced his education at the grammar-school of Hull, which he attended for two years; but on the death of his father in 1768, he was transferred to the care of his father's brother, Mr. William Wilberforce, Esq., of the middle of the parsonage house, in the town of Hull, where he was educated in a country gentleman's residence. He attended the Grammar School in a mean school near Wimbledon. While at school his uncle, with whom he was an ardent admirer of Whitfield's preaching, first led his youthful mind to contemplate the truths of religion, but at the same time imbued him with her peculiar views. His mother, on hearing that he was in danger of becoming a Methodist, withdrew him from his uncle's care, and placed him at the Pocklington Grammar School, near York, where he stayed five years; and he removed thither, the memory of his uncle's influence upon his future life. He was, however, twenty-six years afterwards, that it had probably been the means of his being connected with political men, and becoming useful in life; and that if he had stayed with his uncle he would have 'gone to the Methodists.'

At Pocklington his serious dispositions were soon disapproved of by a life of ease and pleasure. His talents for society, and his rare skill in singing, made him an acceptable guest with all the neighbouring gentry, and much attention was paid to the editor of the York paper, 'in commendation of the odious traffic in human flesh.'

In October, 1776, he entered St. John's College, Cambridge, at the age of seventeen. Here he was at first introduced to dissolve companions, whose habits were not...
very congenial to his taste, and he soon shook them off and entered into more suitable society. By the death of his grandfather and his uncle he had become possessed of a handsome fortune, which enabled him to indulge in every extenuating hospitality, and discouraged him from exerting himself in his college disputes. In spite of his manadelations to idleness, he became a good classic, and acquitted himself well in his examinations; but the irregular and desultory habits which he acquired were not corrected by new meditations, and he often had occasion to regret that the cultivation of his mind had never been sufficiently attended to.

Before he had quitted Cambridge, Mr. Wilberforce determined to enter upon public life. A dissolution was shortly expected, and he aspired to represent his native town, the established profession not being, in his first year when parliament was dissolved, and, after an active canvass, he was triumphantly returned by the electors of Hull. He now came to London, and entered at once into the first society. He was elected a member of the most fashionable clubs, and became intimate with the leading wits and politicos of the day. He had been acquainted with Pitt at Cambridge, and they now met daily in society, and were inseparable friends. The gaiety of his London life did not distract his attention from public business, and he attended not much in the House of Commons, and, without taking much share in the debates, he formed his own judgment upon every question. He was generally an opponent of Lord North's administration, and particularly adverse to the American war, but occasionally voted with the Whig party. The appointment of Mr. Pitt increased, and the genius which that great man displayed led Mr. Wilberforce to predict his rise: 'He comes out,' he wrote to a friend, 'as his father did, a ready-made seer; and I trust to see in his own works what the first man in the country.' In July, 1782, Pitt took office with the Shelburne ministry, and Mr. Wilberforce was fixed upon to succeed the address on the meeting of parliament in December. From this time a tempting prospect opened to the most ambitious. Pitt bore forth himself and his own wits. As he left Pitt, who almost lived with him at Woburn, and travelled with him on the Continent, was daily becoming more powerful, and Wilberforce's political opinions and position in parliament would have justified him in taking the address himself, he was induced to go into the contest. At length, in November, 1783, Pitt became prime minister, and Wilberforce, being entirely in his confidence, exerted himself strenuously, as an independent member, in support of the new administration. In parliament his speeches attracted more attention than ever before. He had been turned upon him by an event most important to the state of parties and to his own personal advancement. In March, 1784, when the dissolution was approaching, a resolution was brought in by Mr. Grenville, in condemnation of the late coalition ministry, and of which the chief object was to defeat the predominant influence of the great Whig families at the ensuing election. Wilberforce hastened to attend this meeting: he understood the free-trade and religious eloquence and effect. His address was carried; and before he had ceased speaking, a shout arose in the castle-yard, 'We've got him for our county member.' He had secretly cherished a hope of this result, yet, considering the overwhelming power of his opponents, he was not prepared for this. In his enthusiasm he forgot his own personal ambition in the happiness of the cause, and was not therefore surprised at the verdict of the country. As the candidate, he had no difficulty in obtaining the confidence of the body of voters. He was elected by a large majority. Delight and confidence were expressed in every part of the county, and throughout the whole kingdom. The Whigs of the city, the Whigs of the county had all come together; and Mr. Wilberforce had the satisfaction of seeing his friend supported by a vast majority of the House of Commons.

Thus before he had completed his 25th year he had attained a station of the highest distinction, and a career of ambition and power lay open to him; but he was destined to follow an original course, to reject the opportunities of personal advancement which offered themselves, and to devote all his energies, and sacrifice all his means, to the noblest of all religious and philanthropic purposes. The reductions of gaiety and of ambition had never wholly effaced from his mind the religious impressions of his youth, and a tour on the Continent with Isaac Milner, in 1784-5, revived his latent zeal. Henceforward a spirit of earnest piety and devotion took entire possession of his mind, and directed all his actions for the remainder of his life and honourable career. He hastened from abroad to support Pitt's measures of parliamentary reform, and early in the session of 1786 he himself proposed an important plan for purifying county elections, by so adverting to the interests of property, and holding the poll in proper time that the late corruption was the same time. This scheme, so obviously useful, was not carried into effect until enacted by the Reform Bill in 1832. Early in 1787 his religious zeal was made public, by his activity in promoting acceptances of a number of Catholics, and voting for the establishment of a college for the education of priests, and in obtaining a royal proclamation against vice and immorality; but his conduct in the House of Commons had not yet borne evidence of the change in his opinions. He was deeply sensible however of the importance of rendering his public station and influence subservient to the advancement of religion, and only waited for a suitable occasion. His reflections in the autumn of that year were—'Two sessions of parliament gone over, yet nothing done for the interests of religion. My intellectual powers have increased, and I am embarrassed now; such is the state of the government; I have long ceased to be responsible to society; I have failed in my expectations; I cannot give away my principles; I must, as formerly, which is highly criminal, considering the weight to be derived from credit for eloquence in this country.' While under the influence of these feelings, the slave-trade, which had been his interest at school, was again presented to him in his position, he resolved to devote himself to its abolition. Six years before he had interested himself for the West India slaves, and 'had expressed his determination, or at least his hope,' that 'he would redress the wrongs of those wretched and degraded beings;' and now, under the united influence of religion and humanity, he laboured to effect this cherished object. It required no little fortitude to undertake the cause of the negro race; but Mr. Wilberforce was not deterred by the conviction of its hopelessness, and the harassing failures in store for Mr. Wilberforce would have discouraged any man whose exertions were not sustained by the highest principle. He prevailing more upon the humane and religious feelings of the country than upon parliamentary support, he availed himself of the agency of a society of which Granville Sharpe was the president, and Thomas Clarkson the agent. Throughout the struggle, which lasted for twenty years, Mr. Wilberforce was ever unremitting in his exertions. His hopes were deferred. Thwarted at one time by the protracted examination of witnesses, outvoted at others, now in the Commons, now in the Lords, he never flinched from the task of reform, and maintained his cause by many admirable speeches, and by a diligent collection and sifting of evidence. Out of parliament he never lost sight of the great object. In his conversations and his letters he conciliated the support of all parties. Cabinet ministers, opposition members, the clergy of all shades of opinion, and his own familiar friends, were alike solicitous to advance the cause of abolition. No pains were spared to enlighten the public through the press, sometimes by his own pen, and sometimes by the pens of many willing friends. At the same time he was perpetually alive to all political changes at home and abroad, and ready to seize upon any occasion for improving the condition of the negro race by negotiation with foreign powers or by the introduction of new measures. Apart from the opposition which he encountered from the West India interest, the fearful excesses of the French Revolution and the rebellion of the slaves in St. Domingo led many to associate the abolition of the slave-trade with the overthrow of the monarchy. But during the seven years this cause alone retarded the success of his endeavours. Meanwhile, though well fitted, morally, for the labours he had undertaken, it is marvellous how his constitution enabled him to bear against the bodily fatigue which he was forced to endure. The spring of 1788, when his labours were yet to come, his health appeared entirely to fail, from an absolute decay of the digestive organs. The first physician, after a consultation, declared 'he had no more to do in this world; it was now time to lose a formidable life; and although he labours most mercifully, from his illness, we find him excelling on New
day, 1780, `At thirty and a half I am in constitution sixty.'
From his infancy he had suffered much from weak eyes, and his exertions were constantly interrupted or rendered painful by this infirmity. Still rising with new hopes and vigour from every disappointment, he confidently relied upon the ever-increasing success. At length the hour of his triumph was at hand. In January, 1807, he published a book against the slave-trade, at the very moment that question was about to be discussed in the House of Lords. The abolition bill passed the Lords, and its passage through the Commons was one constant triumph to his author. Sir Samuel Romilly concluded an affecting speech in favour of the bill by contrasting the feelings of Napoleon in all his greatness with those of that honoured individual who would this day lay his head upon his pillow and remain as one of the slaves. In the whole house, we are told, burst forth in acclamations of applause, and greeted Mr. Wilberforce with three cheers. He was himself so overcome by the touching allusions of Sir Samuel Romilly, as to be unable to discharge to his own satisfaction the duties of a member for Yorkshire, he was unwilling to retire from parliament, and accepted a seat for the borough of Brent. His activity in his new position appears to have been as unconcealed as before; he endeavoured to use foreign powers to follow the example of England in abolishing the slave-trade. He overlooked no opportunity for furthering this object. The restoration of the Bourbon princes, the Prince of Prussia, Talleyrand, the Duke of Wellington, and Lord Castlereagh, were all in turn solicited, exhorted, and instructed. Even the pope did not escape his solicitation. He endeavoured to secure in condemnation of the slave-trade.

Up to 1822 his public exertions had been confined to the universal extinction of the slave-trade, but his views of the ultimate abolition of slavery itself had not been static, and there was now more desire for the 'more human' and 'more practical' mode of thinking. Though he had no idea of being on the verge of a fall, his health however precluded him from devoting the vast labours to this cause that he had given to the former. He entrusted its management in the House of Commons to Mr. Fowell Buxton, and in 1825 retired from parliament, having completed the task of his life. Nevertheless, he did not give up his object, and in 1834, when the recommendations of the Select Committee on the slave-trade were made, he said, and I believe with truth, that he was more deeply engaged than ever in the abolition of slavery. He died in Cadogan Place, where he had always lived, on Monday, July 29th, 1833, and was buried in Westminster Abbey, with all the honours due to a statesman and a statesman of the highest eminence. His remains were placed in the vault of the Church of St. Bride, whose clergy and benefactors he were benefactors.

WILBORD, or WILBROD, SAINT, commonly characterised as 'The Apostle of the Frisians,' was bishop of the Saxon kingdom of Northumbria, where he was born about the year 657. His father's name was Wiglaf. He was educated at Ripon, and was appointed a disciple of St. Cuthbert, and subsequently consecrated bishop of the Frisians, and was a bitter opponent of the Anglo-Irish Church. The latter of these had been established in Friesland, and had there preached Christianity two years in vain. Wilbord remained for thirteen years in Ireland, and then resolved to attempt the conversion of the Frisians himself. His arrival at Tournai was without a contest, and he was received into the church by the bishop, with his attendants or disciples to the number of twelve, the Frisian bishop Perpin, and the two prelates were greeted with a warm welcome. The latter resolved to add to the influence of the monarch that of the pope, and with this end in view he visited Rome in 692. Three years afterwards he gave a second visit to the head of the church, and, receiving the
WIL, No. 1727.

WIL. HENRY, known as the learned tailor, or the Arabian tailor, was a native of the city of Norwich, where he was born about the year 1584, and where he received the usual elementary education in Greek and Latin at the grammar-school; on being taken from which, however, he was bound apprentice to a tailor, with whom he is said to have served seven years in that capacity, and then to have worked seven more as a journeyman. Long before the fourteen years his Greek and Latin had probably been nearly altogether forgotten; but he was now seized with an illness, which at last obliged him to give up working, and in this state he took to reading as an occupation for his idle hours. It is either by accident or taste led to, were some old works of controversial divinity: and the quotations from the Scriptures in the original Hebrew, with which they happened to be interspersed, are said to have first excited him to an attempt to make master of that language. In prosecuting this object he by degrees recovered his Latin, thus enabling himself after some time to exchange his English Hebrew lexicon and grammar for school works of that kind in Latin; and, what was of still more importance, in the course of his studies he also recovered his health, and was enabled to resume his trade. But he did not upon this lay aside his books: he worked part of the day, and devoted the rest, and often an entire portion of the night, to study, so that at last he made himself acquainted with others of the Oriental languages as well as the Hebrew. In March, 1714, he is mentioned as having within the preceding seven years mastered Latin, Greek, Hebrew, Chaldaic, Syriac, Arabic, and Persian.

WILDENS, JOHAN, a celebrated Flemish landscape painter, born at Antwerp. He was the contemporary of 

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Rubens, to many of whose pictures he painted landscape backgrounds, which he knew how to harmonise with the style and colouring of Rubens better than any other landscape painter. Rubens is said to have preferred the works of Wildens to those of Van Uden, whom he employed in the same way. Wildens painted large and small pictures, in some of which there are some good figures painted by himself; but in his best works the figure is placed in the background of the landscape. He painted twelve charming and characteristic pictures of the twelve months, which have been engraved. He died in 1644: the year of his birth is not known; 1594 and 1600 are both given by different writers. (Cf. Encyclopaedia, Vol. xi.)

WILFORD, FRANCIS (Lieu.-Col.), known as an Oriental scholar by numerous contributions to the 'Asiatic Researches,' went out to India, in 1791, as lieutenant of some troops which were sent from Hanover, his native country, to underwrite the East India Company's interests. In 1801, he was given a pension of £100 p. a., and the post of second assistant in the Department of Asia in the India Office. He proceeded to India in 1796, and after a residence of more than a year in Madras, where he was stationed at Rassaputilla, where he devoted some of the time which was not occupied by his professional duties to the elucidation of Buddhist antiquities by means of whatever notices were available to him, and by the cooperation of his authors: he found however great difficulties from the total ignorance of the Oriental languages; and in his first essay, which was published in the 'Asiatic Researches' (1797), he complained of not writing any time to the Oriental languages. Two years afterwards he was stationed at Benares, the centre of Hindu learning, where he engaged a Pandit to instruct him in the sacred dialect, and more especially to point out to him those passages from the Vedas and Puranas which were relative to geography. The result of his investigation was an essay on 'Egypt and the Nile, from the ancient books of the Hindus' (1792). It is needless to say that the Pandit had forged authorities to suit the fancies of his unsuspecting employer; yet so skillfully were the forgeries put forth, that the essay was accepted by the Pandit himself, and the imposture was thereupon imputed by both. Wilford himself describes the imposition as carried on, in the following manner:

'I directed my Pandit to make extracts from all the Puranas and other books relating to my inquiries, and to arrange and copy them; and gave him a pension of seven rupees for his assistance and writers, and I requested him to procure another Pandit to assist me in my studies; and I obtained, for his further encouragement, a place for him in the college at Benares. At the same time I amused myself with walking to all the regions or islands, within the elevated and mountainous country, which was under his charge. And the Brahman immediately substituted the word Egypt for the name of any other country mentioned in the Puranas. We have thought it worth while giving the above extract, for it now renders it entirely impossible to give a determination as to the countries, which we shall mention, with a warning to our readers not to trust even those which he wrote after discovering the imposture in 1804. This circumstance greatly disturbed his peace of mind, and brought on paroxysms, which threatened the most serious consequences to his then infant state of health. He was an original member of the Asiatic Society, and associated with the learned men of the Institut de France (Academie des Inscriptions et Belles Lettres), and was elected a fellow of the 4th Society. Everywhere is a list of his essays, which show great zeal for his subject, but an utter want of sound judgment. They are all inserted in the 'Asiatic Researches':—1. 'Remarks on the Town of Sagar,' i. p. 309 (1797); 2. 'On Egypt and the Nile,' ii. p. 252 (1798); 3. ' Dissertation on the Semiramis,' iv. 303; 4. 'An Account of some ancient Inscriptions,' v. 135; 5. 'On the Chronology of the Hindus,' v. 247 (1797); 6. 'Remarks on the names of the Cabiri,' v. 267; 7. 'On Mount Caucassus,' vi. 435 (1799); 8. 'Of the Navigation of the Red Sea,' xi. 222 (1805); 9. 'Chronology of the Kings of Media,' ix. 62; 10. 'Zira of Vikramaditya and Saliwhansa,' ix. 117; 11. 'On the Antient Geography of India,' xiv. 363 (1809).

WILFRED, SAINT, a Saxon bishop, one of the principal instruments by which the papal authority was extended to Britain. He was descended of a noble family of Berwick, where he is said to have been born in the year 634. He was taught the use of arms and the other accomplishments of a Saxon noble. At the age of thirteen he lost his mother, and became subject to the authority of an unknown step-mother, from which he was relieved by being received into Queen Eanfleda's household. While only in his fourteenth year he was directed by the queen to be an attendant on an aged Saxon noble named Cista, who had resolved to spend his last days as a layman and patron of a small monastery in Lindisfarne. It is said that Wilfred here devoted himself to theological reading, in the course of which he discovered the difference between the practice of the Scotch church and that of the rest of the Christian world as to the observance of the Paschal week, and conceived the design of visiting Rome, that he might obtain a satisfactory solution of the difficulty. In the year 683, when nineteen years old, he proceeded on this journey, accompanied by Benedict Bishop, who afterwards quitted a celibate life, and travelled about the kingdom. He was received into the church of Birnie and Kest. At Rome, where he remained for several months, he received special instruction on the subject as to which he had made inquiries, and on theological matters of more serious importance in the concourses of the Church. He was then called back to the Saxons. The ceremony was performed in time to give him a voice in the celebrated conference of Synod of Whitby, where the Easter question and that of the tonsure were solemnly discussed. The Scot-Irish clergy having received the benefit of the decision of the Council of Council, and authority, Wilfred naturally obtained a high influence in the Synod, in the year 664. He was consecrated bishop of Lindisfarne, and given the jurisdiction of the See of York, as of Wilfrid, bishop of Lindsey, the king of Northumbria, whose dominions were under the spiritual jurisdiction of the Scotch bishops of Lindisfarne, and whom he desired that his clergy should conform to the practice of the rest of the Church. He held the authority. The conference was held at the monastery of Whitby, at the commencement of the year 664. His practice was vindicated by Colman, bishop of Lindsey, on the example of St. Columba; but Wilfred addressed the higher clergy to the Church of St. Luke's, as a matter of his own concern, on the ground that if he refused to obey the decision of St. Peter, he might find on his arrival at the gate of Heaven that they were looked against him. The jurisdiction of the Scotch bishops within Northumbria was given to the Scotch clergy from the circumstance of the sea of York being kept vacant. The king determined to fill the sea, and the choice naturally fell on Wilfred. He saw difficulties in the way of being canonically consecrated in Britain, and proceeded to France, the ceremony was performed on the 18th of March, 1222. The church was much pleased by the same arrangement, and ordained him priest, and who had become bishop of Paris. The ship in which he returned was driven by a storm on the coast of Sussex, where he and his followers narrowly escaped being plundered and murdered by the sea of York, and the inhabitants. In the meantime the influence of the Scot-Irish and British party in the church had got one of their own number, Ceadael, placed in the chair of York. Three years elapsed before Wilfred could get his claim confirmed in the synod of Whitby, when he came in the year 682; but his elevation to the archiepiscopal see of Canterbury, decided the contest in favour of the Roman party in 688. Wilfred, in possession of his bishopric, soon showed the ambition and priestly pride of his character by enforcing the attendance at the church and services; and with a pomp and state. He exhibited within the narrow limits which Christianity then filled in England the same features of character which Hildebrand and Becket displayed on a
larger scale. He carried on a bold contest for superiority on the side of the ecclesiastical against the kingly power, both of them but imperfectly developed, and depending for their extent very much on the personal character of the individuals who might wield them. He appears not to have been luxurious or sensual in his own personal habits; but he lived magnificently, kept a great table, and was surrounded by a body of attendants, which vied in number and splendour with the apartments of the warden of a Bucking- ham palace. His devotion to literature and the society of eminent men did not secure his youth from vicious excesses. He was notorious for his dissipation and extravagance, and at an early age was embroiled in fortunes and tainted in character. In 1740 he married Miss Chatham. His devotion to literature and the society of eminent men did not secure his youth from vicious excesses. They continued to live together for some time, and a daughter was born of their marriage; but at length his excesses and mutual disagreement led to a separation of the couple. This was followed by a series of wild orgies, during which he was seen about town with a young woman, in which his character was exposed to much obloquy. His vices however were not destined to ruin him. Neither his character nor his talents would have guided him to political eminence; but the imprisonment and illegal measures of his opponents made him the idol of the people.

The first appearance of Wilkes in public was in April, 1754, when he addressed the electors of Berwick-upon-Tweed with a view of becoming their representative in parliament. He did not however succeed in obtaining a seat in the House of Commons until 1757, when he was returned for the borough of Aylesbury, for which place he was re-elected in the next parliament, in 1761. In March, 1765, he published the first number of the North Briton, a newspaper, the 'North Briton,' which he undertook in opposition to 'The Britton,' a paper written in defence of Lord Bute's administration. The unpopularity of Lord Bute was already manifest, and the paper increased it to an alarming extent, by stirring appeals to the passions and to national prejudices. The minister quailed before the clamour with which he was universally assailed, and withdrew from public affairs; but his known influence over the king, and the political connection of his chief ministers under Mr. George Grenville, his successor, led to the belief that he still enjoyed a secret control over the national councils. Wilkes, with the assistance, it is said, of Charles Churchill and Lord Temple, continued his attacks upon the government with unceasing energy. The government were watching an opportunity of punishing their mischievous opponent, and at length struck a blow which recoiled upon themselves. In No. 45 of his paper he charged the king with having uttered a false and libellous falsehood in his speech from the throne, and sentenced him to be 'tainted of the North Briton,' an act of sedition and treason. The court of law, however, overruled the decision of the House of Commons, and the 'North Briton' was entered by three king's messengers, his papers were searched, and he himself was seized and committed to the Tower. In a few days he was brought, by aboeus corpus, before the Court of Common Pleas, and discharged out of custody on account of his privilege as a member of the House of Commons. An information however was immediately exhibited against him by the attorney-general, to which he declined to appear. He was, at the same time, dismissed from his command in the militia, and his friend, Lord Temple, was deprived of his office of lord-lieutenant of Buckinghamshire.

On the meeting of parliament in November (1768), the House of Commons were acquainted, by a message from the king, with the proceedings of the court, and the sentence on the paper. The number of the 'North Briton' was laid before them. They immediately resolved that the paper was 'false, scandalous, and seditious libel,' and ordered it to be burnt. The hands of the printers of London proceeded to execute this sentence at the Royal Exchange, they were insulted by the mob, and a riot ensued, the first of many tumults in the cause of Mr. Wilkes. That which had been intended as a disgrace and punishment to Wilkes was thus turned into a raucous scene over the ministers and the parliament. The people had regarded his imprisonment by a general warrant as illegal and oppressive, and his paper, though adjudged libellous as
higher quarters, was read by them with enthusiasm, and its author greeted everywhere with the loudest applause. On his return to the Tower, Weymouth had brought charges of the disorder against the under-secretary of state for the seizure of his papers; and the cause now coming on for trial, he obtained a verdict in his favour, with 1000l. damages. On this occasion Chief Justice Pratt, afterwards Lord Camden, declared the decision to be "unconstitutional, illegal, and absolutely void." [Warrant]

Meanwhile Wilkes had been called upon by the House of Commons to answer the charge of being the author of an open and large unconstitutional, obscene plate, the Thor, afterwards formed and printing and published with an essay on Woman." The latter was an obscene poem of which he had printed only 12 copies, and one of them had been surreptitiously obtained through a printer who had been employed at his private press. By recovering this copy and the use of it he hoped to increase the enthusiasm of the people in his favour; but the means to which they had resorted in obtaining possession of the book, increased the indignation against the government, and the sympathy for the victim of ministerial persecution.

Wilkes remained abroad, and not appearing to receive the judgment of the court, he was outlawed. He travelled on the continent for some years, but did not lose sight of his interests at home. He solicited pardon for the past, and application for a pension or a pension on the ruins, and it is said that he obtained a pension of 1900l. a year from the Rockingham administration, paid out of their own salaries, viz., from the first lord of the treasury 300l., and from the lord of the treasury 60l. each, from the lords of trade 40l. each, &c. (Letters, &c., in the case of J. Wilkes, late Member for Aylesbury," by which he hoped to keep alive the public interest in his favour. In 1769 he returned to England, and in March of that year offered himself as a candidate for the representation of the City of London. He succeeded in polling 1247 votes, but in spite of the violent attachment of the populace, he failed in obtaining a majority. He then declared himself candidate for the county of Middlesex, and on the 28th was returned by a large majority. Serious riots occurred at both these elections, and the court party declared that the City, and even the king's palace, were in danger. Although an outlawry was hanging over his head, Wilkes went privately to prison at the time, and to appear on the hustings, and harangue immense mobs in London, Westminster, and Brentford. After his election he surrendered himself before the Court of King's Bench, but the court refused to commit him upon his outlawry, as moved by the attorney-general, and he was accordingly discharged. He was arrested immediately afterwards on a writ of *copias ululatuum*. A tumult arose, and as the officers were conveying him to the King's Bench prison, he was rescued by the mob. Not thinking it prudent to force his way to the House, he went privately to prison after the dispersion of the mob. He was still under confinement at the meeting of parliament on the 10th of May, and a mob assembled before his prison to demand his liberty. A riot ensued—the military were ordered to fire, and killed and wounded several of the rioters. The death of one person was brought in murder by the coroner's jury, and the magistrate who had given the order to fire was tried for murder and acquitted. The violence which had been resorted to by the popular party as the massacre in St. George's Fields, and the subject of angry complaints against the government. Mr. Wilkes's outlawry was afterwards reversed by Lord Mansfield, but judgment was pronounced upon him for his two libels, and he was sentenced to two fines of 500l. each, and to imprisonment for the two terms of 10 and 12 months. Not contented with his imprisonment, the ministers devised fresh means of persecution against Mr. Wilkes, which, like their previous measures, increased his popularity and diminished their own. He had continued to obtain a copy of the letter addressed by Lord Weymouth to the friends of the under-secretary, to Lambeth, before the riot in St. George's Fields; in which that nobleman recommended the early and effectual employment of the military to suppress disturbances. The letter was published by Mr. Wilkes, and he charged the secretary of state with having 'planned and determined upon the horrid massacre in St. George's Fields' three weeks before its execution. Lord Weymouth complained of this publication in the House of Lords as a breach of privilege, and the case was decided by Lords to the Commons, and a conference held upon the subject. When Mr. Wilkes was brought to the bar to be heard upon a petition which he had presented, he avowed himself the publisher of Lord Weymouth's letter, and the author of the prefatory remarks; upon which it was resolved that his remarks were a scandalous and seditious libel, and, for the second time, expelled him.

A new writ was issued for Middlesex, and Mr. Wilkes was re-elected without opposition and without expense. The House discovered that the writ was void by reason of the expulsion, and issued another writ. Mr. Wilkes was again chosen without a contest, when the House declared him incapable of being elected into that parliament. Nevertheless, when the writ was again returned, the House decided, when Mr. Dingley, his opponent, could not even obtain a nomination, and Wilkes was returned a third time without opposition. This election was likewise declared to be void, and this time a new expeditor was returned to the government persuaded to take its seat in parliament, and to oppose Mr. Wilkes in the approaching election. Mr. Wilkes was returned by an overwhelming majority, and his opponent mustered less than 300 votes, yet the House of Commons declared that Mr. Wilkes had been incapable of being elected, and Mr. Luttrell, being next on the poll, and qualified to sit in parliament, was duly elected as member for the county. This violation of the rights of election was resented not only by the fireeholders of Middlesex, but by the whole country, though still immersed in the King's Bench prison, was receiving substantial marks of public favour. Subscriptions were opened for the payment of his fines and personal debts, and upwards of 20000l. were raised for that purpose. The King, in the meantime, was also heaped upon him plate, jewels, wine, furniture, and embroidered purses of gold. His portrait was in universal request, and was reproduced in every form of art, from the marble bust to the village sign-board.

Another legal triumph soon followed. On the removal of his outlawry, Mr. Wilkes had proceeded with an action against Lord Halifax for false imprisonment and the seizure of his papers. In November, 1769, the cause was tried in the Common Pleas, where he obtained a verdict, with 1700l. damages for the wrong done to him in triumphing over the House of Commons. The House of Commons, though still immured in the King's Bench prison, was receiving substantial marks of public favour. His subscriptions were opened for the payment of his fines and personal debts, and upwards of 20000l. were raised for that purpose. The King, in the meantime, was also heaped upon him plate, jewels, wine, furniture, and embroidered purses of gold. His portrait was in universal request, and was reproduced in every form of art, from the marble bust to the village sign-board.
solutions of the House of Commons in regard to the Middlesex elections; but at length, on the dissolution of Lord North's administration in 1782, he accomplished his object. On the 3rd May, the House voted that the resolution of the February, 1782, by which he had been declared incapable of re-election, should be expunged from their journals, 'it being subversive of the rights of the whole body of the electors of the kingdom.' All the other resolutions and orders of the House concerning the Middlesex election were also to be expunged. In 1784 he was elected for the last time by the county of Middlesex; he did not offer himself again at the dissolution in 1790, but retired into private life.

In attempting to shun the world, he was forgotten, and died December 27, 1797, at the age of 70. He was buried in Grosvener Chapel, South Andley Street, where he directed a tablet to be placed, with this inscription:—'The Remains of John Wilkes, a Friend to Liberty, born at London, Oct. 17, 1727, One who did with his life, his blood, and his fame, render the name of Freedom glorious in the history of the world.'
WIL

He began his career as a painter's assistant, but quickly rose to fame. His works were highly sought after, and he was awarded numerous medals and prizes. Wilkie was known for his realistic depictions of everyday life, particularly in Scotland. He was also celebrated for his portraits, which were highly regarded for their attention to detail and emotional depth. Wilkie's paintings were widely exhibited in Scotland and England, and his work has been influential in the development of Scottish art. He was a key figure in the Scottish School of painting, and his works continue to be celebrated for their emotional resonance and technical skill.
mision, he makes the following excellent observation:—

"From Giotto to Michael Angelo expression and sentiment
seem the first thing thought of, whilst those who followed
seem to have allowed technicalities to get the better of
them, until, simplicity giving way to intractacy, they seemed
to be hurried on by the artist and the connoisseur then
for the untutored appreciator."

In Italy Wilkie remained eight months. He then visited
Munich, Dresden, Tsplitz, Carlsbad, Prague, and Vienna,
and returned for another season to Italy. At Viesens he
began a portrait of a gentleman, thence to Florence
where he stayed two months. At Rome, on his second visit, a public dinner
was given to him by the Scotch artists and amateurs, at which the Duke of Hamilton
presided. During his second visit to Italy his health began to revive, and he
produced from a series of works, exhibited through the south of France, entered Milan,
and travelled to Madrid. In Madrid he painted a picture of a Spanish Council of War,
and two other Spanish sitters, one of which was the Defense of Saragossa,
in which he inserted the portrait of General Pol, the
defender of the place.

In the summer he left Spain, and
reached Paris in June, 1828, and returned to England in the
same month, after an absence of three years. In the exhibition of 1829 he had eight pictures of
Italian and three Spanish, and a portrait of Sir John Kempe of Kelkie. The three
Spanish and two of the Italian were purchased by
George IV. In the same year he painted a portrait of the
king in a Scotch dress. Some of these pictures were much admired by
the Queen, and John Knox, whose
principal characteristics are effect of colour and light and
shade, which, with breadth and facility, he appears to have now
considered the proper objects of high art, and an
advance beyond the truth, simplicity, and character of his
rivals. The knighthood of the order of the
class who allowed themselves to be engaged by
artists, and, to use his own words—"seem to have painted
more for the artist and the connoisseur than for the un
informed appreciations of ordinary men." Of this new style
in portraits he was one of the first English artists to see,
from the study of the old masters, adopted a bolder and,
I think, more effective style, and one result is rapidity."

In other letters he speaks of his impression of Rembrandt, Cor
nerenge, and Velasquez. After the death of Sir Thomas
Lawrence, inserted, which was approved in his place
painter in ordinary to his Majesty: he was also a candidate
for the office of president of the Academy; but there was
only one vote in his favour, Sir M. A. Shee being the suc
cessful candidate.

In the year 1833 he exhibited his full-length portrait of
George IV. in a Highland dress, and the king's entrance
into Holyrood. In 1831 his only works in the exhibition
were portraits of Lady Lynham and Lord Melville.
In 1834 he exhibited a series of pictures, magnificent, like
preaching the Reformation in St. Andrews, painted for
Sir R. Peel for 1200 guineas; and a full-length of William IV.
The John Knox is a work of a very high class, though
a less glowing colour and a more careful execution are
wanting to constitute it a work of first-rate excellence:
It has been engraved in a very masterly manner by Mr. Doe.
In 1833 he exhibited a portrait of the Duke of Buinen in a
Highland dress. In 1834 he exhibited six pictures
of which four were portraits, among them the Duke of Wellington,
his picture, the great attraction of which was his fine picture of
Christopher Columbus submitting the chart of his Voyage
for the discovery of the New World to the Spanish authori
this is a picture of much fine character, with
mechanical effect. Wilkie's works were the
others were portraits. His next principal works were,
Peep-o'Day Boy, painted after a visit to Ireland; and
Napoleon and the Pope in conference at Fontainebleau,
exhibited at the Royal Academy, in 1830; the Queen's First Council and a
portrait of O'Connell. In 1839, his large picture of
Sir David Baird discovering the body of Sultan Tippoo Saib
after staining Birkenapstaum, painted for Lady Baird for
1800 guineas, and generally considered his greatest histori
history. Mr. Burnet is now engraving it for Mr. Moon,
the publisher of so many prints after Wilkie. In 1840
Wilkie exhibited eight pieces: the most striking was that of
Benvenuto Cellini presenting for the approval of Pope Paul
III. a silver Vase of his own workmanship. His portrait
of Queen Victoria, exhibited at the same time, was generally
considered a complete failure. In the autumn of 1840 Sir
David set out on a journey with a friend, Mr. B.; and upon
his tour to the East: various rumours were circulated as
the cause of this journey, but probably none quite correct.
He went by Holland and the Rhine to the south of Ger
many, Prague, Vienna, Constantinople, and

The description of the first sitting:—12th December.
Drove with Mr. Pisanon to the winter-palace of the Sultan;
vans were put in the carriage, in which,
the pictures, after waiting some time, were conducted, through
a beautiful garden, to the palace, changed shoes, and were
ushered up a staircase to a most splendid and comfortable
room; here I put out the colours, easel, and placed chairs;
and leaving the windows all but one darkened, stated that
all was right. After a time his Imperial Majesty the Sultan
arrived: his style was simple and gentlemanly, and his recep
for me very gracious. On taking his seat, his Majesty
addressed me a few words, which Mr. Pisanon interpreted,
to be that he was the most distinguished artist from England, to sit for his portrait,
considering that doing so might show his consideration for
the Queen of Great Brittain, who was so powerful an ally of the
Empire. I bowed gracefully to his Majesty to be seated.
I began the head. I said and looked at it in different times:
I understood he remarked I was making it too
little; then asked if it was to be standing. I assured him
no, but sitting on the throne as Sultan, receiving people
and judging, etc., etc. He said, "I shall
form with the epaulets be seen?" But I urged that for
this picture the cloak of the Sultan would be better,
and that the hands and sword would be seen: this seemed to
please him, and I went on; and I think he thought it like
and pleasing. The Sultan viewed it with admiration,
and said I had some drawings to show his Majesty.
He looked them over, as I thought, with much attention and
slowly—appeared pleased with that of Admiral Walker.
He asked when I should come again; I said, whenever his
Majesty would command. He said Monday, at the same
time. "I sat about an hour and a half; got the face
nearly painted; returned, both Mr. Pisanon and I, highly
satisfied: left the panel and colours in the room."

In January his picture of Sultan IV.
Constantinople by steam for Smyrna, where they arrived on
the 14th. They left Smyrna on the 1st of February, arrived
at Rhodes on the 2nd, and at Beyrut on the 9th. At this
time, says Wilkie, the weather was remarkably fine, mild,
and delicious: the days were long, and there was
no instance of any dark cloud or a maelstrom.
At Jaffa on the 23rd and at Jerusalem on the 27th of the
same month, after a journey from London of six months and
twelve days. Wilkie describes as follows the impression
made upon him by the first sight of Jerusalem—after
ascending an eminence on the road from Jaffa, he says,
"We saw,—and, oh, what a sight!—the splendid walled
city of Jerusalem. This struck me as unlike all other
cities: it recalled the imaginations of Nicolas Poussin—a
city not for everday, not for the present, but for all
time. We in the hot land we visited the Dead Sea,
and tested its level by the barometer of Mr. J. Harvey, who
had lent it to Sir David for that purpose. At Beyrut the
mercury varied from 80-186 to 20-08, the thermometer at
the Mediterranean 70 and 60 on a level. But in passing
with the Dead Sea it rose to 31-372, the thermometer at
68; showing that the level of the latter is much below than
that of the Mediterranean.

On the 17th of April they left Jerusalem for Jaffa
and then took the road to Damascus in Egypt, whence they
started on the 22nd for Alexandria, where they put up at
Wagborn's splendid hotel. At Alexandria Wilkie complained of
illness; he had felt slightly unwell for the last
three months. He commenced a portrait of Mehemet Ali
at Alexandria, who wished the picture, and painted it in
very patiently two hours and a half the first sitting.
On the 21st of May he embarked on board the Oriental for
Egypt; on the 26th it arrived off Malta; on the 1st of June they arrived off Egypt, and at half-past eight in
the evening of the same day his body was committed to the
deep, in lat. 36° 20' and long. 6° 42': the burial service
was performed by the Rev. James Vaughan, rector of Wilt,
and the promenade appears to have been hastened by
industriously indulging in fruit and iced lemonade
at Malta. On the 28th of August, 1841, a meeting of
the friends of Sir David Wilkie took place at the
Thatched House Tavern, St. James's Street, at which Sir
Robert Peel presided. The result of the meeting was,
that a subscription was commenced for the purpose of erecting
a suitable monument to the painter: 2000l. have been col-
clected, and a statue of Sir David Wilkie, to be executed by
Mr. Joseph, is to be placed in the inner hall of the National
School.

Wilkie was tall and of sandy complexion, with sharp
eyes, was polite and mild in his manners, was a staunch
member of every club in town, and, though he was not
able to do so, in the same way there are a series of remarks
upon painting by Wilkie, which contain many sound views,
and are in parts very well written.

Wilkie's works are well known by the excellent engravings
in Raeburn, Burnet, Cousin, Doo, and C. Fox. A
set of coloured prints in imitation of Sir David's Oriental
sketches has been lately published by Graves and Warmes-
yond, London. It might be added that Wilkie's Life is an
appendix containing a list of all his works, with the pro-
prietary names, and the prices received for them by the
painter. At the sale of his effects, which realised several
thousand pounds, there were many unfinished works, some
of which were brought at very high prices: an unfinished
picture of the School sold for 700l.

(Allan Cunningham, The Life of Sir David Wilkie, with
his Journals, Tours, and Critical Remarks on Works of Art,
and a Selection from His Correspondence, London, 1841.
for the Edinburgh Review.

WILKINS, JOHN, Bishop of Chester in the reign of
Charles II., was, according to Anthony à Wood, 'a person
endowed with rare gifts,' a noted theologian and preacher,
a curious spirit in several matters, an excellent mathema-
tician and experimental artist as well seen in mechan-
isms and new philosophy (of which he was a great pro-
motor) as any of his time.' He was the son of Walter
Wilkins, a goldsmith and citizen of Oxford, but was born at
Oxford. He was educated at the University of Oxford,
and was nonconformist of some note, and author of several theo-
logical works, from one of which, an Exposition of the Ten
Commandments, he is styled 'the Decalogist' at Fawse-
ye, near Daventry in Northamptonshire, in the year 1614.
While engaged in the work, he became dangerously in-
jured, for he was in the drawing-school, at the age of
thirteen, that he claimed a student at New Inn Hall,
where he shortly removed to Magdalen Hall, where for
a short time he was under the tuition of John Tombes,
the celebrated Anabaptist and opponent of Baxter. Tombes
left the University while Willis was an undergraduate,
and did not proceed to his first degree at the usual
time; but he took the degree of B.A. October 20, 1631,
and that of M.A. June 11, 1634. Having then arrived at
the age of twenty-one, he took orders, and became success-
ively chaplain to William, Lord Say; George, Lord
Berkeley, and Charles, Count-palatine of the Rhine, with
whom he resided for a considerable time while he was
in England. The skill of Wilkins in the mathematics,
to which that prince was much attached, is said to have been
his chief recommendation for the last-mentioned appoint-
ment, and for which he was in great demand in different
countries. During this time he wrote several
small treatises on mechanical philosophy. His early edu-
cation had given him a strong bias towards puritanical
principles, and he was strong in the Puritanical phi-
wisely, and in his political views he was taken up
an anti-puritan, and was rejected from the party,
which he entered before the Restoration, on the
basis of his views on the subject of//-m:, from
which he was more than once in prison. After the
Restoration, he was appointed chaplain to
William, Duke of Gloucester, and
under the protection of the Earl of
Northumberland, he went to Paris,
where he entered the University
and was admitted a student in the
College of France. Here he became
the pupil of the great French
philosopher, Descartes, and was
particularly interested in his
system of philosophy, which he
adopted with great zeal. He
also became a close friend of the
great French mathematician,
Fermat, and was deeply interested
in his work on analytic geometry.
Wilkins returned to England in
1653, and was appointed chaplain
to William, Duke of Gloucester,
and later to the Prince of Wales.
He was also employed in the
preparation of the works of
Descartes, and was one of the
commissioners appointed to
translate the works of
Descartes into English.

Wilkins's opinions on ecclesiastical subjects
led to the formation of the Royal Society. According to
Bishop Sprat and Dr. Wallis, indeed, he was the principal
mover in the foundation of that society. According to
him, the main purpose of the Royal Society was to
advocate and promote the study of natural philosophy,
and to prevent the introduction of foreign ideas into
Britain. He was also one of the founders of the
Academy of Mathematics, which was established in
London in 1662.

Wilkins was a man of great learning, and
his works are still valued for their
accuracy and scholarship. He was a
prominent figure in the early
history of science in England,
and his influence was felt in the
development of the Royal Society
and the Academy of Mathematics.
his day, they contain much that is chimerical and absurd. The principal are the following:—1. "Discovery of a New World; or a discourse tending to prove that it is probable that there may be another habitable world in the Moon; with a discourse concerning the possibility of a passage thither."

2. "Two Discourses concerning the possibility of a passage thither."

3. "A discourse called the other world which he supposes to exist in the moon, and if there be inhabitants there, to have commerce with them, is perhaps the only one that could be seriously open to the consideration of musical artists, as it appears to be a deed of proving that the construction of a flying-machine of sufficient capacity for such a voyage by is by no means the chimerical absurdity which most, even in the present day, would consider it."

4. "Mathematical Magic, or the Wonders that may be performed by Mechanical Geometrical," a singular work, the object of which is to make them all, and to determine the proper numbers for any purpose."

5. "Alphabetical Dictionary, wherein all English words, according to their various significations, are either referred to their places in the Philosophical Tables (in the Essay) or explained by such words as are in those tables."

6. "An Essay towards a Real Character and a Philosophical Language," a work founded upon or suggested by a treatise published a few years previously by George Dalrion."

There are several reprints of these works. Wilkins left his papers to the care of his friend Tillotson, allowing him to use his own discretion as to publishing any of them; and in 1675 appeared a treatise "On the Principles and Duties of Natural Religion," which he had left in an unfinished state. In 1682 Tillotson published a volume containing fifteen of Wilkins's sermons, and some others were published separately during his life and also after his decease.

(From "Woods Athenae Oxonienses by Bliss; Burnet's History of the Art Time: Biographical Britannica.")

WILKINS, SIR CHARLES, Knight and K.C.H., was born in the year 1749, at Frome in Somersetshire. His father, Walter, derived his descent from an ancestor of the earls of Albemarle. His first volume was "The English Vagabond," written in 1684, and was reprinted in 1701.

In 1708 he was appointed to the post of "The False Queen," written in 1692, and was reprinted in 1701.

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Arabic and Persian, as well as of some of the spoken languages of India. He effected this at a time when such studies were generally neglected, and when no part of them had yet been made compulsory. In the year 1778 he aided the efforts of the Governor-general Hastings for improving the education of the masses, by translating the Bengalee grammar of Haldhed, who, in his preface, informs us that having failed to obtain types of the Bengalee character from the ablest artists in London, he had had recourse to Mr. Wilkins, whose success was complete. This book, which contained an original and unique work, was published in 1778. It may be said to have a singular charge himself with the various occupations of modern linguists, as a collector, translator, and printer. Mr. Hastings, in a letter to the chairman of the Court of Directors, remarks, that 'to the ingenuity of Mr. Wilkins, unsaid by models for imitation or by artificers for his direction, the government was indebted for its printing-office, and for the many official purposes to which it had been applied.'

Life of Sir William Jones, attests, that 'the art of printing had been introduced into Bengal by the untaught skill of Francis Wilkins, and to this we shall always bear an intrinsic value from its containing as extraordinary an instance of mechanical abilities as has perhaps ever appeared. In a country so remote from all connection with civilized nations, in a people so ingenuous, and of such feeble minds.'

In the same manner Mr. Wilkins formed a set of Persian characters, which the Bengalee, continued to be employed for the service of the Company. As the inefficiency in the native languages advanced, he became more convinced of the importance of endeavouring to make himself master of that parent dialect which he found diffused through the whole of the modern literature, and science of India. He continued therefore during the remainder of his residence in that country to follow this hitherto untrodden path of science, and thus has justly obtained the title of 'the Father of Sanscrit Literature.'

It is unfortunate that Mr. Hastings and William Jones, and of enjoying the intimate friendship of those distinguished men, who took the most lively interest in his literary pursuits, and whose approbation stimulated his exertions; nor can it be doubted that his knowledge of the Oriental languages, and the salutary influence which his Sanscrit learning gave him over everything connected with the Brahmins, were often eminently useful in the civil and judicial government of India. A MS. letter of Sir William Jones addressed to Mr. Wilkins, which are in the possession of his family, are numerous instances of Sir William's references to him in aid of his own studies in Sanscrit, as well as relating to questions connected with his judicial office. In one of these letters he says that you are the least understood Sanscrit.' In another, it is of the utmost importance that the stream of Hindu law should be pure, for we are entirely at the mercy of the Hindu lawyers through our ignorance of Sanscrit.'

In the year 1784 Mr. Wilkins was instrumental, in union with the same accomplished scholar, in establishing the Literary Society of Calcutta, whose publications, called 'The Asiatic Researches,' were regarded with the greatest interest by the learned of Europe. A separate work however of his own operated perhaps still more strongly to exalt curiosity, and to give hopes of an ample harvest in the field of Sanscrit letters: namely, his translation of the Bhagvat-gita, one of the Epistles of the Mahabharatas, or great Indian poems, which has been transmitted in manuscript by the governor-general to the chairman of the Court of Directors in 1788, with a recommendation that it should be published, was printed accordingly at the expense of the Company, with an appended letter of Mr. Hastings before alluded to, in which that enlightened statesman took occasion to communicate his views on the encouragement necessary to be given by the government of India to the cultivation of languages and sciences, and the necessity of the Government being caused by the unremitted attention given to his studies and public duties, rendered necessary his return to Europe. At Bath in the following year he published an English translation of the 'Hitopadesha; or the Book of Fables,' from that Persian collection of fables, the French and English versions of which are known by the name of 'Fables of Pilpay.'

Not long after his death, Mr. Wilkins gave his last address to the Sanscrit and Arabic Societies, and will be found in the volume of the Society's Transactions of the year 1782.
afterwards he began to arrange the materials for a Sanscrit grammar, which he had brought with him from India; and at the same time he had collected a specimen of the same method which he had employed at Hoogly with the Bengalee types, he formed with his own hands a set of Devanagari characters in steel, made matrices and moulds, and cast the necessary type to contain the twenty pages of the grammar, when, in May, 1796, his house was burnt to the ground, and so suddenly that although his books and manuscripts were saved, together with the greatest part of the punches and matrices, the type had entirely perished. A new set of the type and the twenty pages had been sent to his friend the late William Mar- dden, Esq. [MARDEN], and is probably the only one extant. This misfortune, added to other circumstances, prevented the resumption of his labours till the year 1806, when, soon after the formation of the East India College at Hertford, the study of Sanscrit having become one of the most desirable branches of the system of education there established, Mr. Wilkins zealously aided this object, the grammar was speedily completed, new letters were cut, and in less than two years this, the greatest of Mr. Wilkins's works, was published.

In 1801 he had been appointed librarian to the East India Company. Under his fostering care the library and museum acquired a degree of interest which they had not before possessed; and became an attraction to visitors both native and foreign, who, in common with those connected with India continually revisiting thither, were not less gratified by the obliging attitude of the librarian, than they were astonished with admiration of his profound and extensive knowledge: an elegant testimony to this effect is to be found in the amusing romance of "Hadji Baba." In 1805 he became visitor and examiner of the students in the Oriental department both at Hailey-bury and at Addiscombe. Thence he returned to his duties here, and formed the duties of them, with scarcely any intermission, until his death, which occurred on the 13th May, 1836, within a few days of attaining his 87th year. To such a degree did he enjoy the facilities which his mind to the last, the end of his life bounded in a day's notes at Cambridge before the timely statue of Mr. Cockeral, who on his death, is made, at the request of the president of the Board of Control, a translation of a letter from the Imam of Muscat, and forwarded it to that minister. Sir Charles Wilkins was twice married, and left three daughters.

The published works of Sir Charles Wilkins, beside those already mentioned, are, a new edition of Richardson's 'Arabic and Persian Dictionary' (1806-10), and the roots of the Sanscrit language (1815). In Dalrymple's 'Oriental Repository' and in Dodsley's 'Annual Register' and Sakoontala, an episode of the Mahabharata; and in the 'Annals of Oriental Literature' another portion of a translation of the same great poem. To these may be added some papers in the early volumes of the ' Asiatic Researches,' and his ingenious translation of the Sanscrit arc 'The Institutes of Menu,' of which he had completed more than two-thirds, when he was induced to desist by the knowledge that Sir William Jones was engaged on the same work, and which the latter published in 1794. Mr. Wilkins had the honour of being a member of the Royal Institute of Paris, and of many other learned societies abroad as well as at home. In 1825 the Royal Society of Literature presented to him their gold medal, bearing the inscription 'Carolo Wilkino, Literatui Sanscriti Principii.' In 1833 George IV. conferred on him the honour of knighthood in the Guelphic order.

Residing generally in London, he had a large acquaintance with many of the literary and scientific men, and was one of that distinguished society, consisting of Rennell, Marsh- den, Wollaston, Young, and others of the same class, who so often assembled around the president of the Royal Society, Sir Joseph Banks; or one of that which met periodical at the club established at the expectation of Reynolds and Dr. Johnson, of which Sir Charles Wilkins was elected a member in the year 1806. His comprehensive mind was not less alive to the advances of science, the discoveries in the library, mechanics, and the arts, than to philology, and no man was more ready and liberal in imparting his knowledge to others.

WILKINS, WILLIAM, was born August 31, 1778, at Cambridge, where his father was a builder. In that university he received an academic education, being matriculated at Gonville and Caius College in 1796, and graduating as sixth wrangler in 1800. Having in the following year obtained a travelling scholarship to Italy and Greece; and almost immediately after his return, published his 'Antiquities of Magna Graecia,' imperial folio, 1807, a work rather unsatisfactorily executed and not very specially valuable, but it was one of the first made by him of his previous studies, and ambitious of giving his own university a classical piece of architecture, he should have postponed all other considerations to that alone. Enamoured of the study of the Grecian style, he seems to have thought that this style could be adapted to the occasion, nor how far the occasion required that the style would not admit of. Instead of endeavouring to adapt it, he merely applied it, just as he found it; and was not surprised to see it adopted for his purpose, merely from their columns, for in other respects they are merely so many neat houses; at all events, this college shows to pecular disadvantage at such a place as Cam- bridge. Neither does the building make amends in other respects, as a important and the accommodation it affords being very defective, although the cost has been enormous.

In the case of the East India College at Haileybury, built which he erected a few years afterwards, when he held the appointment of architect to the East India Company, in the resignation of the late Mr. Cockeral, there were at least no local associations to deter him from having recourse again to the pure Greek architecture; but it is some- where strange that, instead of endeavouring to improve upon such a splendid example, he should not have expanded it more than repeat the same design. He afterwards succeeded better when he had to adopt Gothic for the additions and alterations which he executed at the three colleges of Trinity (1822), Corpus (1823), and King's (1826) at Cambridge. While he had hardly taken his hand at all to the preparations for the elevation, he was also less fettered by those pedantic scruples which prevented him from treating the Grecian style with freedom, where it must either be entirely rejected or else be so limited as to lose all character. His freedom was for the actual occasion:

Greater freedom he did afterwards allow himself in the façade of University College, Gower Street, originally called the University of London, where he has not scrupled to introduce some new ideas into the principal entrance in order to keep the style. In 1835 the site of the office, the only part which remained in the metropolis, excepting the University Clubhouse, was purchased by the society for 12,000, and on it obtained a plan to raise a new building. The completion of the building was left to his successor, the Wren.

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While the National Gallery was incurring criticism, both well meant and meritorious, the architect entered into the competition for the new houses of parliament, in 1836; but his designs were the most extravagant of the three, and the very extravagant nature of his conceit led him to oppose, with great acerbity, the project of his rival. The remarks however attached to it by its author in the descriptive catalogue of the designs were in a tone that called attention to it there, and he immediately followed them up by *An Apology for the Designs of the New Houses of Parliament.* Americans 'were not long in noticing the excesses, and in his own profession he admitted very freely, and with no little bitterness of tone, both on the successful design and the conduct of the commissions. To annoyances and vexations of this kind succeeded a still more dubious event, the public admission of his eminence in his profession; for on the death of Sir John Soane, in 1837, he was elected to succeed him as professor of architecture at the Royal Academy, of which he had been a member in 1834. Yet while his requirements were more fully supplied than those of his more successful predecessor, the question was asked whether he would have proved a very competent instructor. His *Prohanciones Architectonicae,* the first part of which (the only one published) appeared just at that time, 1837, did not augur well for his future lectures. There was an absence of the right spirit and the absence of the breadth of view with which the plan of the building was executed, to make himself more practicable. His constitution had at last been greatly impaired by smart, and he had been visibly sinking for some time. He died at Cambridge, August 9th, 1839, on his way to visit the Cathedral. The remains were removed to the Corpus Christi, a part of the new buildings at that college erected by him, and which he considered his best work.

Among other structures by him are:—the Nelson Pillar in St. George's Park, Dublin, 1836; the Nelson Pillar at York; a statue of Major-General Hawick, in Hyde Park Corner, which is remarkable, and not unpleasantly so, for the tetrastylistic portico of square columns in its east front. Donnington Castle, the seat of Earl Moira, and a house for Mr. Forster, at Oswestry, are of a similar character, and as it is remarked by Mr. Rhead, in his *New Vitruvian Britannense,* that they are rather identical, the first being no better than *Strawberry Hill* Gothic, and the second a mere parody of Grecian Doric architecture. It is more probable that they were by Mr. William Wilkin, or Mr. William Wilkin; such, for by himself, must have been designed by himself and he went abroad.

Besides the literary works already mentioned, he published *Athensia,* or Remarks on the Buildings and Antiquities of Athens; *Edifices of Vitruvius,* containing those books relating to the Public and Private Edifices of the Antients, *Imp. 4to,* 1812, to which last it was his intention to add a translation of some of the other books; but though such translation was announced about two years before its death, it never appeared.

**WILL.** The notion of necessity has been explained in the article Necessary; it remains here to consider the question of the Will.

The nature in which this question has been involved is perhaps mainly owing to carelessness in the use of terms; and yet, however carefully we may select and use our terms in discussing this question, it has always been found very difficult to state it clearly. Harley puts the question, *the necessity of human actions, in opposition to what is generally termed free-will;* and he says, *by the mechanism of human actions, I mean that each action results from the previous circumstances of body and mind; and, in the more general term, from the causes which they depend on.* Thus, he supposes that by free-will is meant a power of doing either the action or its contrary, while the previous circumstances remain the same. If by free-will be meant a power of beginning motion, this will be a kind of the same thing, since according to the opinion of mechanism, as here explained, man has no such power; but every action or bodily motion arises from previous circumstances, or bodily motions, already existing in the brain, i.e., from vibrations, which are either the immediate effect of impressions then made, or the remote cause by means of which a certain action is determined. But if free-will be meant anything different from these two definitions of it, it may not perhaps be inconsistent with the mechanism of the mind here laid down. Thus if free-will be defined the power of doing what a person determines his wills to do—of deliberating, suspending, choosing, &c.—or of resisting the motives of sensuality, ambition, resentment, &c.—free-will, under certain limitations, is not only consistent with the doctrine of mechanism, but even flows from it; since it appears, from the foregoing theory, that volitions, and actions, are combinations of ideas, of existing and restraining affections, and of performing and suspending actions, arise from the mechanism of our natures. This may be called free-will in an essential and philosophic sense, in contradistinction to that which is opposed to mechanism, and which may be called free-will in the philosophical sense. This passage is not selected as being a peculiarly successful statement of the question, but simply because it shows with sufficient clearness of mind, belief under consideration, and that independently of the author's theory of vibrations.

The universal language and practice of mankind imply a belief in a kind of free-will. To deliberate, to choose, to act in pursuance of the choice, to act with knowledge, to act with consideration, are expressions in every man's mouth, and things within every man's ordinary experience, both of himself and others. Every man also supposes that another will choose and determine pretty much in the same way that he himself does, and that individuals and species, as a rule, that is, each man believes that every other man will be governed by motives, or will act according to motives, in the main pretty much as he would himself. When men act differently under the same external circumstances, the cause of the difference is supposed to be either insufficient, incorrect, or bad motives, or a difference in the circumstances, in which it is here supposed that there is no difference, but to some difference in the persons. We believe therefore that circumstances move men to act, and that what we have done is pretty much what we would have done if we had had the same motives, and exercised these various motives and giving the preponderance to one or another, and that different men possess and exercise this power in different degrees. This may be called, in a sense, a free exercise of the will, and every man, at least, is of sound mind, believes that he has this power, and is supposed by others to have it.

The belief that man possesses this power is the foundation of laws which forbid acts under certain penalties. All legislatures have believed that the knowledge that a certain act will produce a certain effect, or of the consequences of an act, may induce free-will, and has imposed on those who are disposed to do the forbidden act; that the persons who are by any motives led towards such act may, and as a general rule will, deliberate on the penalty attached to the act before they do it, who are the objects of the laws by a comparison of the advantage which they expect to derive from the act, with the certain penalty attached to it. Many persons do not violate the law, because they have been brought up in habits of uniform obedience to it, and therefore the penalties of the law have little or no effect upon their conduct; but it will hardly be disputed that the fear of punishment has some effect on many men, and is a motive which, operating on the mind and operating upon the mind, produces the constraint. The law supposes a power in men to determine how they will act; or, in other words, it supposes at least that motives can be presented to men which shall in some way and in some degree determine their conduct.

As the law is under the influence of motives, and that they have also the power of weighting motives, is universally admitted, and for all practical purposes it is immaterial to inquire any further. A man subjects himself to a certain discipline, he educates his children in a certain method, and legislators forbade freely to do a variety of acts—all acting under the belief that the discipline, the education, and the rules of law are so many motives, which, by constantly operating on the mind, will produce on the whole a certain line of conduct in those who are under them.

But it has been already said that the external circumstances or the motives being the same, two persons will...
often act differently under them. As the external motives are by the supposition the same, there is some difference in the persons which causes the difference of conduct. Under the same external circumstances one man will violate the law, and another will not: one will steal and rob, and commit murder, and another will not. It is generally the same, the circumstances under which the act is voluntary: that he could, if he chose, have acted differently. Practically, he who executes the law will not trouble himself with the question whether the act was his interest, or what his individual reasons for it were, when the circumstances under the circumstances: it is shown that such a person possessed the ordinary understanding of mankind, he will see no reason for remitting the punishment; because he believes that in most cases, if not in all, the penalty attached to an act will operate on future people free from it. The question of an absolute free-will, then, does not concern a legislator. It is enough for him to present the proper motives for acting or not acting in certain ways, if he believes that such motives will on the whole produce the conduct which he requires. Nor does the question of absolute free-will concern any other person who has to direct or operate upon others. If he believes that he can place such circumstances around persons or present to them such motives as will ensure a certain course of action, it is unimportant whether he believes that the course of action is necessarily determined by these circumstances, or by these occurring with other circumstances, or that the persons who are under their influence do in some way or another determine to act in the wish they are disposed to. But if we examine more closely any particular act of a man's life, suppose it to be an act which has about it all the marks of slow determination, in what sense can we say that this is an act of absolute free-will? The ordinary language of mankind, and the language of all mankind, when rightly analyzed, is the true exponent of universal opinion. Confused and perplexed as it often is, it contains within it implicitly the elements of all philosophy. Now when we once refer to antecedent circumstances as affecting or determining the choice, and present them on any one occasion, we give up the theory of an absolute free-will, for we make every act of will depend, in some degree at least, on something prior to it, and thus we have an infinite chain of events, and consequently we find ourselves engaged in an inquiry which is beyond the reach of our capacity. Thus it, as Hartley says, "by free-will be meant a power of beginning motion, no person can consistently with his own nature, and that of others maintain this proposition; if he does, he will contradict himself almost as often as he speaks.

Human actions, then, are, in some degree at least, subject to fixed laws to which human actions are subject. Every human action has its antecedent, on which it is in some degree depends; but whether every human action is as necessary, in the sense in which Hume explains the term necessary, as the other phenomena which we see, is precisely in dispute. (Hume, Essays, "Of Liberty and Necessity.")

When it is said that every event and every human action has its antecedent on which it depends, it must not be understood that it is meant, here at least, to maintain anything else than this. Such antecedents are events which, according to our experience, precede the given event uniformly, or at least with sufficient uniformity to generate in our minds the notion of a certain order or continuity; for though any given antecedent event is called the cause of any event which uniformly follows it in our
by analogy such terms as are applicable only to our own limited capacities: and we say that he wills generally that all things shall be as they are, but that he disapproves of some. That he permits man so much liberty of action as to render it necessary for society to be vigilant against the evil doers who would disturb its repose, is no more an imputation upon his goodness than that he permits fire, tempest, and war and pestilence and famine to thin the numbers of mankind. So far as concerns those who suffer, it is the same thing. He does not allow all the rest of the world to walk on the earth free and uncontrolled, man, or from causes over which man has no control. It is consistent with all experience to say that the Deity has willed that man shall suffer pain both through the agency of other men and through the agency of his fellow-men. Now if we shall assume that God could have willed in a sense in which many persons understand it—which would, according to their notions, exclude all pain and suffering—whatever misery happens through man's misconduct must be due to an evil power outside of man, to an absolute free-will, and sometimes exercising it in a way different from the Deity's wishes. There is no evading this difficulty. An absolute free-will in man or in any other being is inconsistent with the omnipotence of the Deity as we have determined, shown by that which we at our observation of the mode in which man is operated upon by motives and circumstances. But there is nothing which prevents us from attributing to man, as we do in our daily expressions, a power of determining his acts, under given circumstancess, that is the correct and is not in another direction and in a wrong in a preference to a right direction. And it is further admitted by the universal language of mankind, that the same man who acted wrong under one set of impulse might and would have acted right if he had been influenced by the right action; if he had been influenced by the right impulse, it is said, is also admitted, and oftentimes are instantly and in a wrong preference to a right direction. And it is M. That a man may reason discipline himself, that, in any given circumstances, he should have acted before he died and that he may have motive power, a command which shall enable him to act in the right direction, a power which Hartley speaks of in the passage at the head of this article. But if some men can do this, all cannot; and even in the case of him who can do it, we may say that he is more than half, and if it is motive interest. But circumstances over which he had no control. Man's will is circumscribed by the constitution of things, of which he is a part. He is placed in circumstances in which he is operated upon by various motives to act. If it is said that a man who has made his mind he died wrong, that is as true a man the power of bequeathing the whole of his personal property. And now, by the 1 Vict. c. 26, for the amendment of the law with respect to wills (whence the Deity has then enumerated with respect to wills are repealed, except so far as the same acts of the Deity are sufficient to the extent of wills or estates par autre vie to which this act does not extend), it is enacted that it shall be lawful for every person to devise, bequeath, and dispose of, by his will, executed as required by that act, all real and personal property except such a will as might have been made in a manner not contrary to the law, extended equally to the bequeathing of personal estate, except that infants of a certain age, namely, males of fourteen and females of twelve might dispose, by will, of personal property; and that by the 12 Car. II. c. 21, a 6, a father under twenty-one might, by a will appoint a guardian to his children. But now, by the second section of the new Wills Act, no will made by any person under the age of twenty-one years is valid; and no will made by any married woman is now valid, except such a will as might have been made by a married woman before the passing of the new Act. The disability,
of a married woman is not absolute. She may make a will of her personal property with the consent of her husband, which will be operative if she survive her. The validity of a husband's will depends upon the state of his mind at the time of making it. Persons born deaf and dumb are presumed to be incapable of making a will, but the presumption may be rebutted by evidence. Blindness and deafness alone do not in themselves produce incapacity. Traitors and felons are incompetent to make wills from the time of their conviction, and it seems that an outlaw, though it be but a child of four, is incapable of making a will. He is personal property till his outlawry is reversed. Deeds of lands by aliens are at least voidable, the crown being entitled, after office found, to seize them in the hands of the devisee, as it might have done in those of the alien during his life.

The testator's will is the supreme act of government, and was subject to exceptions. Customary freeholds and copyholds were not within the Statute of Wills, and therefore, unless where devisable by special custom, could in general be passed only by means of a surrender to the use of a will. By custom, if the lands were supplied in cases where it was a mere form, but the act did not apply to cases where there was no custom to surrender to the use of a will, nor to what are called customary freeholds. [MANOR.] Again, a devisee or surrenderer might not be present before admittance, though an heir-at-law might. Conditions were not devisable, nor were rights of entry or action, nor contingent interests when the person to be entitled was not ascertained; lands accrued after the execution of the will also did not pass by it. The execution of a will is in general by three witnesses, or by subscription in the presence of the testator, and is necessary. The presence of witnesses required by the power under which the appointment is made. By the 11th and 12th sections, it is declared that the act is not to affect the wills of soldiers or actual service or of mariners at sea, which are to remain subject to the particular privilege given by the 11 Geo. IV. and 1 Wm. IV., c. 20. Questions sometimes arisen as to what amount to publication of a will, section 13 expressly enacts that no other circumstances depend. It is a will made in France and written in French, of lands in England, must contain expressions which when translated into English would properly designate the lands in question, and must be purchased according to the forms required by the English law. For the latter reason lands in England belonging to an English subject domiciled abroad and dying intestate, will descend according to the English law. With respect to personalty, on the other hand, in cases both of domicile and of estate, the rule of the domicil affords the rule for the construction of the will and the distribution of the property. Thus, if a British subject becomes domiciled abroad, the law of his domicile at the time of his death would be the rule which the English courts would follow in determining the validity of his will and in administering his personal property in England, and vice versa in the case of a foreigner dying domiciled in England. The question of domicile is one more of fact than of law, and cases sometimes arise where it is matter of difficulty to establish the actual domicile of the testator at the time of the death of the party. Consequently what rule is to be followed in the distribution of his personal estate. Where an Englishman domiciled abroad has real property in England, he ought, on account of the difference of the doctrines in the two countries, to be regarded as having real and personal property, to make two wills, one solely executed according to the English law, devising his real estate, and another framed according to the law of his domicile disposing of his personal property. A will being in all cases whatever, a revocable instrument. It was an established rule of law that the will of a sane sole was revoked by her marriage, but marriage alone was not considered as a revocation of the will of a man; though marriage and the birth of a child, whom the will would undermine, conjointly had that effect. In these circumstances together produced such a total change in the testator's situation, that it could not be presumed he could intend any previous disposition of property.
and no annuity or other alternation made in or out of the will, after execution is to have any effect except as far as the words or effect of the will previous to the alternation cannot be made out, unless the alternation is executed as a will, such execution to be in the margin opposite or near to the alternation, or to a memorandum referring to the alternation. By the Statute of Wards, personalty is to be deemed vested immediately, but it was not necessary that he should sign in their presence, whereas by section 6 of that act a mere revocation in words must have been signed by the testator in presence of witnesses, but they were not required to sign in the margin or on a memorandum. The intention to destroy is what the law regards, and which it requires should be expressed by one or other of the modes pointed out in the act. The 23rd section alters the law as to how far the direction that the will should be revoked should be expressed, making it expressive, and a cancellation by drawing lines across the whole or part of the will. These acts will now be of no effect unless properly executed and attested. By the 23rd section no conveyance or other act made or done subsequent to the death of the testator, except an act of revocation, is to prevent the operation of the will upon such estate or interest as the testator has power to dispose of at the time of his death: and by the 24th section every will is to be construed with reference to the real and personal estate of the testator at the time it is to speak and take effect as it had been executed immediately before the death of the testator, unless a contrary intention appears on the will.

The 22nd section of the act provides that no will or codicil, or any part thereof, which shall have been in any manner revoked, shall be of the estate otherwise than by the re-execution thereof, or by a codicil executed in manner required by the act, and showing an intention to revive the same, and when any will or codicil which shall be partly and not wholly revoked, the revocation is not to extend to such parts as had been revoked before the revocation of the whole, unless a contrary intention appears. Under the old law, if a second will or codicil which revoked a former will was afterwards cancelled, the former one had been destroyed, and was not to be revived. It had previously been determined (4 Ves., 610) that a subsequent codicil, merely for a particular purpose and confining the will in other respects, did not amount to a republication of parts of the will revoked by a former codicil. This section extends in a particular case where a will had been first partially and afterwards wholly revoked. The rules of law as to settlements of real or personal estate by deed or will have already been explained. [Surety, Estates of real or personal estate]
If the testator had no other lands answering the description, a general devise would have been a good execution of the power. But it was otherwise if he had any other lands which would satisfy the terms of the devise. The enactment applies only when the testator has a general power of appointment. When the power is limited or special, it seems that the old rule of construction will still hold. As to personalty, the testator's rule was, they were to be construed to reference to the person, on the somewhat unsatisfactory ground that as any person must be supposed possessed of some personality, there was enough to make a general bequest operative without reference to the property, as where the power is not special. It seems that the old rule must still prevail where the power is special or limited. By the 28th section a devise of real estate without words of limitation is, unless a contrary intention appear by the will, to be construed to pass the estate. This clause infuses by very considerable alteration of the old law, under which, in accordance with the doctrine that the heir was not to be disinherited by implication, it was settled that a devise of lands without words of limitation conferred on the devisee an estate for life only, even notwithstanding the appearance of a contrary intention in other parts of the will. The 29th section enacts, that in any devise or bequest of real or personal estate the words 'die without issue,' die without leaving issue,' or an issue, or that the power shall be construed to mean a want or failure of issue at the time of the death, and not an indefinite failure of issue, unless a contrary intention appear; except in cases where such words import, if no issue died when the devisee should be a person who shall live to attain the age or otherwise answer the description required for obtaining a vested estate by a preceding gift to such issue. Under the old law, when a testator gave an estate to A and his heirs, if A died without issue, B, though his meaning in most cases was that B should have it unless A had issue living at the time of his death, the word 'issue' was held to comprise descendants of every degree existing at any distance of time, and the courts would construe it as meaning that while the estate was real estate, A took an estate tail and acquired the absolute dominion over the property [REMAINDER], and where it was personally the ulterior disposition to B was void for remoteness [SETTLEMENT].

By the 28th section every devise of real estate (not being a right of presentation to a church) to a trustee or executrix is to be construed to pass a fee simple, unless where a definite term of years or an estate of falsehood less than a fee simple is expressly given to him. And by the 32nd section trustees under an unlimited devise to their testator, where the trust may endure beyond the life of a person beneficially entitled for life, are to take the fee. When the limitation in a will was made to a trustee by way of use, he took the estate by the operation of the statute and for uses, without reference to the nature of the trust. But in other cases the question was determined by the intention of the testator, as collected from the nature of the trust; and the trustee was considered to take only that quantity of estate which the exigencies of the trust required. Such a rule of construction was obviously very difficult operation, and it was often not easy to determine in whom the fee was vested at any given period, and therefore who were the proper parties to deal with the property and to join in a court of chancery for its restitution or retention in the hands of the assignee. This last-mentioned section will in a great measure remedy this inconvenience.

It follows from the nature of wills that the devises and bequests contained in the will are to be construed as to failure from the death of the devisee or legatee before the testator. This is called the doctrine of lapse. It applies equally to devises of real estate and to bequests of personalty. It is a general rule that words of limitation to heir at law or executor are to be construed as to failure before the death of the testator, they being considered not as words of gift, but merely as indicating the legal devolution of the property. When the gift is to several persons as joint tenants the gift is consumed before the testator's death. In preventing lapse in case of the devisee or legatee dying before the testator, they being considered not as words of gift, but merely as indicating the legal devolution of the property. When the gift is to several persons as joint tenants the gift is consumed before the testator's death. In such an event there can be no lapse; for as joint tenants each is the legal owner of the whole, any one existing at the death of the testator will be entitled to the entirety. The same is the case where the gift is to a class, unless where the individuals of the class were ascertained before the lapse. T devices have been introduced into the law of lapse by 32d section, the 24th act. The 32d section of the 24th act shall not lapse, but that where the devise is in tail during the life-time of the testator, leaving issue, the devise shall take effect as if he had died immediately after the death of the last preceding in tail, and, by the 33rd section, gifts to children of the testator who shall die before the testator, having issue living at the testator's death, are not to lapse, but, if no contrary intention appear by the will, are to take effect as if the personalty operated upon all the property of that kind belonging to the testator at the time of his decease, there could obviously be no intestacy with regard to any part of the personal estate while there was a valid residuary bequest. The same will now be true of devises in tail in which there is a valid residuary devise, so that there will no longer be room for many of the questions that arose as to whether the residuary devisee took beneficially or as a trustee, and as to the devolution of real estate directed to be sold.

It should be observed that where an ambiguity exists on the face of a will, or, as it is technically termed, is patet, parol evidence cannot be admitted to remove it, because the will is not to be construed to the extent to which the 32d section would require it. Where the ambiguity exists in the will, or arises before the circumstances disclosed when an attempt is made to carry the will into effect, it may be removed by reference to the surrounding circumstances in which there is a valid residuary devise, so that there will no longer be room for many of the questions that arose as to whether the residuary devisee took beneficially or as a trustee, and as to the devolution of real estate directed to be sold.

(Powell On Devises, and Jarman's Notes to Bythow's Precedents, Wills.) [EXECUTOR; LEGACY.]

WILL. (Scotland.) The right of bequest in Scotland is confined to moveable personal or personal property. It does not extend to immovable real property, and cannot, therefore, be exercised by devise or devises, nor can it be exercised by testament or testaments, fixtures, those appurtenances of a family mansion (such as the pictures, plate, and library) which are called 'heirship moveables,' the machinery in mines and manufacturers, the stock on farms, and every description of personalty which was subject to the right of the granter. In Scotland, Settlements may be made of heritable property in the manner which will be described below, but it is a principle of the greatest importance, and one the neglect of which is often productive of the most serious consequences, that no such settlement can be made in the form of a will. All persons of sound mind above the age of puberty (14 males, and 12 in females) may execute wills; and persons under guardianship, as wives and minors who have curiae or both, may, with the consent of their guardian, settle and dispose of their own property. Until very lately the will of a bastard was ineffectual; the moveable goods of such a person, lapsing to the crown on his death, were distributed by a gift in exchange; but this peculiarity has been abolished by S. 81, T. V. (1819). Executors of testators may settle property on residuary legats, or may settle it in the presence of two witnesses who bear testimony to it. It is valid to the extent of a hundred pounds Scots or £8, 8s. 8d. sterling; and if the bequest should exceed the sum, the legatee may recover to the extent of the hundred pounds Scots. A will, sufficiently formal in all points to prove its terms and its date, must be executed in the following manner:—The granter's usual signature must be given at the end, and, if there be more than one sheet, on each sheet: the usual practice is to sign each page separately. The two witnesses, or one witness in the case of one witness, must sign the will, or the descending name of it, and the surname or its initial letter or it, above, and the surname or its initial letter below. He must either sign in the presence of, or show and acknowledge his subscription in the presence of, witnesses, who must be witnesses of each other, and be over the age of 21 years. The witnesses sign the will at the end, each placing after his name the word 'witness.' The will must terminate with ' testing clause,' setting forth that the granter has signed the deed in presence of the witnesses, who have subscribed their names and signed the same; or that each bequests to others, at a certain place on a certain day. The testing clause must contain the name and description of the writer of the deed, the number of pages it consists of, the number of words written in ensuere or interlined, and all the objectionable matters. If the will contains these formalities of which the absence is fatal to the deed—often in which it will throw the onus probandi on the holder. Where the will is holograph, or written by the grantor...
It does not require to be attested; but if it be tested, it in the first place does not prove itself holograph, and the statement that it is in the writing of the decedent must be proved by evidence to be true; and, secondly, it does not own date; and if there be any other title, it will be presumed to have been granted a time as will give that title the preference. If the mansion were made executable, it also relieves authority in presence of two subscribing witnesses, a sign for the testator, and describes the transaction tarae doquet. A clergyman of the Established Church may act as a notary for the signing of its title. The testator must be old enough to do so; and if there be no one named, or is supplied by operation of law. Wills executed by persons domiciled out of Scotland, if they be secondly, the testator who would carry such property in the place where they were executed, will be effectual to convey moveable property in Scotland; but no will, whatever be the law of the place where it is made, can dispose of heritable property in Scotland. The last dated will is the effective one, and all other wills considered as revoked by it in so far as they are inconsistent with it.

The peculiar feature of the law of Scotland out of which arises the circumstance that heritable or real property cannot be bequeathed is, that no deed conveying such property is a nullity if the will of the testator is not executed. Such 'dispositive terms,' or terms making over the property at the moment of the signing of the deed. Thus the terms 'I grant, convey, and make over,' are sufficient to carry heritage; but the terms 'I give, or hereinafter make,' will not carry property in Scotland, and at the time of death, it might not be turned with it to another person unless that person were accepted as a mutual by the feudal superior. A conveyance not intended to take effect until after the cedent's death (for instance, a devises disposition,) and the method of creating a settlement of landed property was constructed on the forms by which the feudal usages were gradually adapted to the conveyance of land from a seller to a purchaser. A deed of settlement relating to landed property is a testamentum properly so called, for to accomplish the purposes of a virtual bequest, the following methods have been adopted by conveyancers:—

1. the granter may convey to himself, with a 'substitution' or remainder to his destined successor; 2, he may grant a deed of remuneration, reserving to himself the life rent; 3, he may grant such a conveyance, reserving power to alter. It is of the nature of a conveyance of land that to be effectual, delivery of the deed to the assignee, or an equivalent, must have taken place, and thus a settlement of land to be effectual must be completed by the person, and if one or more for his behoof, or must have been entered in a public register, or must contain a clause dispensing with delivery. The formalities necessary to accomplish the conveyance of landed property is the act of the party who transacts the conveyance.

The term 'freehold' is used for real property in Scotland, but with this difference, that in the settlement of heritable property, if the party cannot write, the deed must be executed by two notaries for four witnesses; and in this case a clergyman cannot act as notary. To be an effectual deed, a settlement of landed property must also contain authority for completing the feudal title to the property, and this authority will vary with the nature of the holding. When however the holding is in the Roman people, this will be in clear terms a conveyance de praebenda, although the formalities necessary for completing the feudal investiture be omitted, and it be thus insufficient of itself to create the estate, it may give a right of action to compel the heir-at-law to tender a seisin, or a proper compensation. In general, if the person is dead, he is by that act bound to make good its provisions in favour of all other persons. Thus, if the deed be in the form of a bequest, and in itself incapable of carrying heritage, if it convey moveable property to the heir which he would not have been entitled to, he is bound, if he take advantage of it, to fill its destination of the heritage. No settlement of heritable property to the prejudice of the heir-at-law can be validly granted on a death-bed. Three elements are necessary to a valid disposition on a death-bed: 1st, that the grantor was ill of the disease of which he died when he granted the deed; 2nd, that he died within sixty days after executing it; and 3rd, that he did not go to church, or to a market, unsupported, during the sixty days. The act 7 Wm. IV., and 1 Vic., c. 56, and the other enactments relating to wills in England, do not apply to Scotland.

WILL, ROMAN. A Roman will was called Testamentum. Testamentum was defined by the jurists of the Imperial period to be a legal mode of a man's declaring his intention in due form, to take effect after his death. The phenomenon was one of a very ancient age.

The power of making a Roman testament only belonged to Roman citizens who were sui iuris, a rule which excluded a great number of persons: those who were in the power of another, as sons not emancipated, and daughters; Imperium, and were therefore per immuniti or under the protection of others; and, as a general rule, all women. The circumstances under which a woman could make a will were peculiar; and they would require a very particular statement. A male of the age of twenty years, because he was under some special incapacity, could make a valid will. A female, so far as respected age only, acquired this capacity on the completion of her twelfth year.

Originally Roman citizens made their wills at Calata Comitia, which were held twice a year for this purpose. It is not said that these wills were made in writing; and it is here assumed that they were made at the Calata Comitia only for the purpose of securing the proper evidence of the testator's intention. It has been maintained by Niebuhr, that the rules in Calata Comitia may be compared to the Gentes might give their consent to the testamentary disposition, but this conjecture is not supported by evidence. If a man died in the interval between two such Comitia, he must have made a testament written. But wills could also be made In Procinetu, who were done by the soldier under arms and in presence of the enemy. Another mode of testamentary disposition was introduced, apparently for the purpose of preventing intestacy. If a man, says Gaius (ii. 102), had neither made his will at the Calata Comitia nor In Procinetu, and was threatened with sudden death, he transferred, by the form of mancipatio, his familia, that is, his patrimonium, to a friend, and told him what to give to each person after his death; this was called the testamentum per ae et libram, because the transfer was effectuated by mancipatio. Thus it appears that the testamentum per ae et libram was a formal transfer of the property during the lifetime of the owner to a person who undertook to dispose of it as he was directed. As it was a substitute for the testamentum for Calata Comitia, it is a probable inference that it only differed from the testament made at the Comitia in wanting that publicity. The two old forms of testamentary disposition, adds Gaius, fell into disuse, and that per ae et libram became the common form of will. Originally, the testator himself could dispose of his estate (familiae emptor) occupied the place of the heres at a later time; when Gaius wrote, and long before his time, the old form of testamentary disposition was retained as an exception to the testator's right to dispose of his estate, as being too inconsistent with the duties devolving upon the heir and executor. The form of testamentary disposition was then made into a form which would carry into effect the testator's intention. The formal purchase was only retained out of regard to antient custom, and the institution of a heires became necessary to the validity of a will.

The form of testamentary transfer per ae et libram is described by Gaius (ii. 104). As in other acts of mancipation, so in this, there were five witnesses of full legal age (puberes). These five witnesses are considered by some modern writers to be the representatives of the five classes of heres, and that the confirmation of the dispositions was rendered valid by the consent of the five classes, so here it was rendered valid by the presence of the five witnesses. In this article it is supposed that they were present as witnesses.

Written wills, as already observed, were not necessary, for neither mancipation nor the institution of a heres require a writing. But written wills were the common form during the later Republican and the Imperial period. Wills were written in wax tablets, and a piece of wax, called 'era' (wax) is often used as equivalent to tabula. A Roman will was required to be in the Latin language until a.d. 439, whilst it was enacted that wills might be written in Greek. A Roman will in the later periods was sealed and signed by the witnesses, and in some cases by the testator. The will was marked with a ring or something else on the wax, and the names were added. The seals and names were on the outside, for, according to the old law, there was no occasion for.

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the witnesses to know the contents of the will. The old
practices of the testator to show the will to the witnesses,
and to call on them to witness that what he so presented to
them was his will. It was not unusual for a man to make
several copies of his will, and to deposit them in some safe-
keeping. Augustus, the emperor, made two copies of his
will (Sueton., aug. 101); and also his successor Tiberius
(Sueton., Tib., 76). The Vestal Virgins were often the
keepers of wills, or they were deposited in a temple or
with a friend. At the opening of the will the witnesses or
the greater part, if alive and on the spot, were present,
and after acknowledging their signatures the will was
opened.

It has been mentioned that in order to make a Roman
will valid, it must appoint or institute a heres. The heres
was a person who represented the testator, and who had
the legacies which were left by the will. He stood in the
place of the familiar empor, or formal purchaser of the
property in the old form of will. A heres might be appointed
in such words as follow: "Titius heres esto," "let Titius be
my heres," or "Titum heredem esse jubeo," "I will Titius
to be my heres." Generally all Roman citizens who could
make a will could be heredes; but persons could be
heredes who could not make a will—slaves for instance,
and others who were not sui juris.

The case of wills and other instruments was punished by
severe penalties under a Lex Cornelia.

The development of the Edictal or Praetorian law at
Rome introduced a less formal kind of will. If there were
seven proper witnesses and seven seals, and if the testator
had left his will in the form prescribed, and if the
will and at the time of his death, the edict dispensed
with the ceremony of mancipation and gave to the heres
or heredes the bonorum possessio. This mode of testa-
mentary disposition existed as one could either make his will by the civil
form of mancipation, or he might make it after the praetor-
ian form with seven seals and seven witnesses, without
any mancipation. The form of testamentary disposition by
mancipation is ultimately supported by the most ven-
ient praetorian form. The legislation of Justinian
required seven male witnesses of proper age and due
legal capacity; and it was sufficient, if the testator de-
clared his will orally before these witnesses.

A Roman will, as already observed, was valid if the
testator had a disposing power at the time of making his
will and at the time of his death. It follows that his will,
though made at any time before his death, was sufficient
to dispose of all the property that he had at the time of
his death. The English rule of law was established in the case
of an English will by the recent act (1 Vic., c. 20) so to
real property; it always applied in the case of an English
will to personal property. But an English will is valid
if the testator subsequently loses his disposing power
for any reason if he become insane. A Roman will was not
valid under such circumstances; and it also became invalid in
other cases.

In order to render a Roman will valid, it was necessary
that the heredes sui of a man (his sons and daughters who
were in the class of heredes sui) should either be appointed
heredes or should be expressly excluded from the inher-
tance. A will which was illegal at the time of being made
was testamentum instiugum, that is, 'non jurum factum,' not
made in due and lawful forms. A will which was unjustly
became invalid; it might become ruptum (broken) or
irritum (ineffectual).

A second will duly (jure) made rendered a former will
invalid (ruptum); and it was immaterial whether the second
will was made within or without the year. The
rendered a former will of no effect, and the testator died
testate.

If a testator sustained a capitis diminutio after making
his will, that is, if he lost any part of a Roman
citizenship, it was essential to give him a full testamentary
power, the will became irritum, ineffectual. A prior will
might become Ruptum by the making of a subsequent
will; and such subsequent will might become irritum in
valid. By chance, if there was no heres to take
under the second will.

Though a will became Ruptum or Irritum, and con-
sequently lost all its effect by the Jus Civile, it might not
be entirely without effect. The bonorum possessio might
be granted by the Praetorian law, if the will was attested
by seven witnesses, and if the testator had a dispos-
ning power in the proper forms required by the Jus Civile
had not been observed.

The rule of Roman law which required heredes sui to be
expressly exheredated applied to posthumous children.
If a suus heres was born after the making of the will, and was
not recognised as having succeeded in due form, he
would become Ruptus. This rule of law was thus expressed:
"adscriptum rumpitur testamentum." There were the
cases in which a will might become Ruptum by a qua-
dratagnation.

A testament was called Inoficiosum when it was made
in due legal form, but not "ex officio petita." When
a man did not give the heredita, or a portion of it
to his own children or to others who were in a near
relation to him, and when there was no sufficient reason
in passing them by, the persons so injured might bring
an action called Inoficiosi Querela. The persons who could
maintain this action were particularly defined by the le-
alisation of Justinian. If the Testamentum was deduced to
the competent authorities to be Inoficiosum, it was
ascended to the amount of one-fourth of the heredita, which
was distributed among the claimants.

The ground of the Inoficiosi Querela is explained by
Savigny (System des Heutigen Röm. Rechts, ii. 12), who
in his nearest kin, it was presumed that such person had
merited the testator's disapprobation. If this was so,
and it was considered that the testator had by his will due
them a wrong, and the object of the action was to
request a redress. In the cases of the testator's will,
never was the establishment of the complainant's claims.
to which the obtaining of part of the testator's property
was a subsidiary means. The expression Testamentum is
of officius form was used by the Republicans and in Quintus,
but it is not known when the Inoficio was introduced.

A Roman codicil (Codicilli, for the word is not used in
the singular number till a late period under the Empire
was a testamentary disposition, but it had not the full
effect of a will. It was made in the same capacity as
heres. Codicilli were often inserted in a will to make
the provision for their heirs, as it was not uncommon for
the heirs to be the sons of the testator or of a near
relative, who was appointed to be a father figure in the
life of the testator. Codicilli were also used to make
provisions for a religious endowment, or to provide for
the support of a dependent.

The subject of Roman wills is of great extent, and it
involves questions of considerable difficulty. The author
authorities and the works of the learned have been made use
of in this article, to which may be added Ulpian, Fragmenta, tit. 20; Dig., 23, tit. 7; &c.;
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to London for the purpose of further improvement, and was about to settle there, when a relative in a good practice at Darlington died, and Willan became his successor. He remained at Darlington about a year, and he returned to London in 1782. During the time he was at Darlington he analysed the sulphureous mineral-spring of Croft, and published the result in an octavo volume, with the title 'Observations on the Sulphur Water at Croft near Darlington.' A second edition of this work was published in 1798. In this work are descriptions of the peculiar forms of vegetation that inhabit various parts of the waters. The chemical analysis of the waters is not to be depended on, having been made at a time when analytical chemistry could ensure little accuracy. He recommends these waters for the cure of some skin diseases, and perhaps here may be found the germs of inquiry that led to his future labours.

In 1783 the Public Dispensary in Carey Street was opened, and Willan was made physician. In 1789 he was allowed to open the Dispensary, and in 1790 he published a work on the Practice of Medicine. This work was illustrated by coloured plates of the various diseases which were described in the latter part of the 18th century. The first part was published in London in 1798, and contained the first order into which he had divided the several diseases of the skin. The second order, scaly diseases of the skin, was published in 1801. He did not live to complete this work. Two more volumes appeared in 1805-7, containing a part of his third order, the rashes, in which the varieties of scab, itch, and the like, are comprehended. The remainder of the rashes and the Bulla, or large vesicles, was published in 1808. The subject of vaccination having excited great interest, Willan was induced to publish a volume on this subject out of the regular series of his work entitled 'Diseases of the Skin.' In this work he gave a full account of Jenner's discovery, the cow-pox, also of the chicken-pox, and of other cutaneous diseases which might be confounded with the vaccine disease. The remaining portions of the work, including those of measles, on which he had been the most active, were not published as a completion of Dr. Willan's work; but all the materials having been committed by him to the care of Dr. Bateman, were afterwards published in a work entitled 'Diseases of Cutaneous Diseases, exhibiting the characteristic appearances of the principal genera and species comprised in the classification of the late Dr. Willan, and completing the series of engravings begun by that author,' London, 1810. This work was entitled 'An Enquiry into the Origin and History of Cutaneous Diseases,' and its application to a large number of cases, Willan did more for the advancement of the knowledge of the diseases of the skin than any previous writer, and laid the foundation for the successful labours of Bateman, Rayer, and subsequent authors.

Besides this great work, Willan published several papers in Journals and Transactions, upon various professional subjects. During some part of the time that he was connected with the Dispensary in Carey Street, he published monthly reports of the cases, with reservations. These reports contained much valuable information, and those from 1796 to 1800 were published in a separate volume, with the title 'Reports on the Diseases of London,' London, 1801, 12mo.

In the early part of his life he published a little volume entitled 'History of the Ministry of Jesus Christ, combined from the Narrative of it in the four Evangelists.' This was published in 1789, and a second edition, with notes and observations, appeared in 1786. Willan was fond of antiquarian pursuits, and read several papers before the Antiquarian Society, of which body he was elected a fellow in 1791. One of the most elaborate of his papers was an essay on the practice of Inflammation by need-fire, a practice which still continues in some of the northern counties of England. He was elected in 1809 a few years before the Royal Society.

During the latter part of his life he resigned his public situations. He took an active interest in the establishment of the Fever Hospital, and was made one of its first physicians extraordinary. His health, which never was strong, began to decline in 1810, and his friends persuaded him to embark for Madeira, where he died on the 7th of April, 1812.

At the time of his death he was engaged in investigating several points connected with the antiquities of medicine. Among other communications which occupied him was the nature of the ignis sacer: the evidences of the prevalence of small-pox, measles, scarlet-fever, and other epidemic diseases amongst the ancients; the history of leprosy, and also of lues.

Bateman, 'Memoir of Dr. Willan,' in 32nd number of Edinburgh Medical and Surgical Journal.'

Willdenow, Carl Ludwig, a botanist, was born in 1768, at Berlin, where his father was an apothecary. He was sent to a grammar-school, and then became a student in medicine at Halle, whence he proceeded to Langensalza, for the purpose of studying chemistry in the laboratory of Wiegell. He took his degree of Doctor of Medicine at Halle, and returned to his native city, and, having gained considerable success there, he was sent as an observer, and a good practical physician; and his classification of the diseases of the skin must ever be regarded as a great step for the advancement of the knowledge of the forms of disease.

WILDERNW, CARL LUDWIG, a botanist, was born in 1768, at Berlin, where his father was an apothecary. He was sent to a grammar-school, and then became a student in medicine at Halle, whence he proceeded to Langensalza, for the purpose of studying chemistry in the laboratory of Wiegell. He took his degree of Doctor of Medicine at Halle, and returned to his native city, and, having gained considerable success there, he was sent as an observer, and a good practical physician; and his classification of the diseases of the skin must ever be regarded as a great step for the advancement of the knowledge of the forms of disease.
the rarest plants growing in Europe. Willdenow corresponded with most of the botanists of his day, and from Klein he received plants from India; from Humboldt and Bonpland, those of America; from Labillardière and Smith, those of New Holland; and from Desfontaines, those of the coffee plant. Thus, in 1794, 1200 species he found growing in the garden. He left 6000. He also collected a large herbarium, consisting of above 20,000 species of plants.

The great work of the life of Willdenow was his 'Species Plantarum' of 1753. He commenced this work in 1757, and continued publishing it at intervals till 1810, when his health became so enfeebled to enable him to go on. He proceeded as far as the first part of the fifth volume, which contained descriptions of the species of the order Filius. A second part of the fifth volume, including the mosses, was published by Schwägrich in 1830; and Link, in 1824, published two parts of a sixth volume, including the Fungi, Hyphomycetes, and Gymnomyces. This work was the most important one of its day for systematic botany, as it included descriptions of all species that had been described since the first publication of the 'Species Plantarum' by Linnaeus. The first volumes of the book are not so well executed as the last, which is easily accounted for when the different position in which the author was placed and the number of volumes. There are also many manifest errors in the references to works, and in the quotation of synonyms, which diminish its value, and which have produced some very severe criticisms. It is possible that some of the magnitude of the work was the last high fault, there was nothing to supply its place till the publication of the 'Prodromus' of D' Candolle, and where this is incomplete, the aid of the 'Species Plantarum' of Willdenow is called for. The whole work is arranged according to the Linnaean system. From 1800 to 1809 Willdenow published at intervals descriptions with coloured plates of plants growing in the Botanic Garden at Berlin, under the title 'Hortus Berolinensis,' Berlin,folio. He has published many extemporal papers to various journals and Transactions of societies.

In 1811 Willdenow went with his family to Paris for the purpose of studying and describing plants in the collections there. He however was able to effect little, on account of his health, and he returned to Berlin, where he died on the 10th of July, 1812. He was a quiet reserved man, and too little communicative to make an efficient teacher, and comparatively few of his pupils have distinguished themselves as botanists. He was an ardent admirer and horticulturist, and his system, does not appear to have been cognizant of those principles of classification or the physiological facts that have latterly contributed so greatly to the advance of botany generally.

The Conqueror's first measures were eminently gracious and conciliatory; even in rewarding his Norman followers. He, who had deprived no Englishman of anything to which he had a just claim; he probably limited his seizures to the lands and other property of those who had fallen in arms against him. He respected also the public liberties, as well as private rights; the police of the kingdom was made much more efficient, and at the same time the taxes were collected with less severity, and public order and good government were established. If the Saxons, at least some of those at Canute, been governed either more wisely and wiser or less oppressively (in all respects except that it was under a foreign domination) than it was now.

But circumstances made it allowable to this state of things. On the one side a numerous people, the old occupants of the country, exasperated by defeat, and on the watch for revenge; on the other, a handful of foreign intruders, flushed with recent victory, and feeling themselves invincible. The whole work is arranged according to the Linnaean system. From 1800 to 1809 Willdenow published at intervals descriptions with coloured plates of plants growing in the Botanic Garden at Berlin, under the title 'Hortus Berolinensis,' Berlin, folio. He has published many extemporal papers to various journals and Transactions of societies.

(Willdenow, Lehrbuch der Botanik; Biographie Medicale.)

WILLIAM I., King of England, styled THE CONQUEROR (in Latin Conqueror or Conquisitor, in French Conquereur, meaning only, in the language of the feudal system, the conqueror), was the illegitimate and only son of Robert, Duke of Normandy, surnamed Le Diable (the Devil), and was born in 1027. The Anglo Saxon story makes his mother the daughter of Fulbert le Croy, a Tanner and tanner of cloth, whom she had enamoured of as she was dancing with some of her female companions; her name, it is said, was Arlette or Harlotta, whence our English Harold. This is a very suspicious etymology. According to the contemporary historian William of Malmesbury he was the son of Hildegarde, the daughter of Hildric, and born in 1027. On the other hand, he was the son of Ethelgiva, the daughter of Ethelfred, who was married to a Roman nobleman, and the daughter of King Ethelred, and the son of Hildric, a Saxon nobleman, and of Ethelgiva, the daughter of Ethelfred, who was of Roman origin. He was the son of Ethelgiva, the daughter of Ethelfred, who was married to a Roman nobleman, and the daughter of King Ethelred, and the son of Hildric, a Saxon nobleman, and of Ethelgiva, the daughter of Ethelfred, who was of Roman origin.

The story of the early part of William's life has been given in his brief Norman anecdote (xvii. 281). He succeeded to that duchy as William II., on the death of his father in 1035. The commencement of his transactions with England and his acquisition of the crown of that country by the victory of Hastings, or rather Senlac, gained Saturday, 14th of October, 1066, have been detailed in the articles on the Conqueror.
against the city of Exeter, the head-quarters of the south-western insurrection; but with all his vigour, it was not till after a siege of eight days that the town was taken into the place, and even then he engaged that the inhabitants should not be injured either in their lives, their properties, or their municipal privileges. In this quarter of the kingdom, as yet at least, the revolt scarcely seems to have been a Saxon or national movement; it might have grown to that, but at present it was apparently little more than a resistance to some oppressive proceedings, or apprehended proceedings, of the established authorities. William was satisfied therefore with making no alteration as far as the submission of the inhabitants at the cost of some concession or compromise: it was necessary that he should not leave such a flame behind him to gather strength while he should be engaged with the more formidable rebellion in the north. That occupied him with little interruption for some time, and then for a great part of the succeeding year. At the head of it, when it had broken out, were the two earls Edwin and Morcar; they were fallen upon and compelled to make their submission; and for a time the attempt seemed to be crushed. A second rising was as speedily put down; but in the course of the succeeding summer of 1069, the three surviving sons of Harold, landed at Plymouth from Ireland, in June, with a fleet of sixty-four sail, and then, in July, Canute the son of Sweyn, king of Denmark and Norway, landed at the head of a much more formidable armament: the Irish invaders were driven back after having plundered the adjacent country; the Danes were joined by the newly quieted inhabitants of Yorkshire and Northumberland in the Tyne and opposing the invaders of the east coast, which ensued, which did not indeed last long, and in which William came off victorious, but which left that part of his kingdom literally a desolate wilderness; for, after he had subjugated the most formidable of his opponents, he was promised to be effectual in preventing a new insurrection, except actually to depopulate the country by fire and sword, and to reduce a large tract of it to the solitude and silence of death. It is affirmed that above a hundred thousand people were, by deliberate and deliberate, a terrible operation, and that for nine years thereafter not a patch of tillage was to be seen between York and Durham; nor were the ruins of the buildings that had been thrown down in the reckless devastation cleared away for more that a century.

From this time William ruled his kingdom like a true conqueror. The natives of the country were rapidly deprived of everything; and reduced to a state of complete slavery. Offices both in the church and the state, from the highest to the lowest, were usurped by the Norman gentry, and, with the exception, filled with Normans and other foreigners. On any pretence or no pretence at all, by confiscations and unjust decrees, by force or by fraud, nearly every Englishman was in a short time made a serf, and reduced to the smallest imposts. Fortresses were erected and garrisoned in all the considerable towns to overawe the inhabitants. In short the country was reduced to a vast encampment, in which the only freedom, public or private, that was left was the right of a small number of insolent masters to tyrannize at will over a multitude of toiling and helpless bondsmen.

All this however, and the deluge of blood in which the northern rebellion had been quenched, had the full effect that it was darkened the right banner of the Conqueror. He was put down a band of outlaws, who, headed by the trepied and the outlaw, was composed of the island of Ely; and they were routed out in the course of the year 1071. In 1072 the Conqueror, all England being reduced to submission, found himself at liberty to lead a great army across the northern border to chastise the Scottish king Malcolm Canmore, who, besides having received and protected Edgar Atheling, whose brother he had murdered a day before, immediately after the suppression of the Northumbrian insurrection, made an inroad into the western parts of York and Durham, and spread almost as much devastation in that quarter as the vengeance of the English king had done along the eastern coast. As William advanced, the inhabitants of the land were fled before him, but, setting fire to their farm-houses and villages, and carrying away with them everything of value which the flames did not consume, left the land a bare and silent desert. He continued his relentless march southward, and there he met the army of Malcolm at a single engagement, the following year William sent an army into Scotland under the command of his son Robert; but after advancing only a few miles (to a place which Simeon of Durham calls Egisfret), it returned without having effected anything. In the following year William was killed in the Tyne, which were ejected on the Tyne, with the view of checking these Scottish inroads.

Meanwhile, in 1075, during another visit to William to his kingdom, he was attacked by a number of Anglo-Norman barons, with Roger, the son of William Fitz-Osbern, and successor in the earldom of Hereford, at their head, offended, as they professed, at his generally haughty bearing and oppressive government, but chiefly moved, it seems, by jealousy of his ambition. He was met, taken to himself in the fruits of their common conquest, had entered into a confederacy to drive him from the throne. But their conspiracy being detected, they were hurried into an armed rising before their plans were matured, and their junto was arrested by the vicars and justiciaries William de Warrenne and Richard de Bifaut, in a battle fought at a place called, by Ordeines Vitus, Padun, by which is supposed to be meant Beecum, or Bisham, in Northumbria. Upon the death of William, the Saxons, who, under the protection of Norsemen, established his dominion over that country.

The next and only other attempt which was made in William's lifetime to shake his throne, though it were at first unavailing, was also to recover the kingdom of Denmark. What the rest had done, defeated partly by his vigilance, promptitude, and energy, partly, as one would say, by his good fortune. In 1068 Canute, the son of Sveno, who had now succeeded his father as king of Denmark, put himself at the head of a great naval armament with the awed design of asserting his hereditary claim to the English crown; William immediately collected a great army to oppose him, by bringing over multitudes of mercenaries from every part of the continent, but the king never came to the armistice of the sword; the sagacious English king having posed to have employed his treasure in corrupting the forces of his enemy, as well as in hiring mercenaries for his own defence: that it as it may, one cause or another always prevented Canute from putting to sea; the wind was contrary, or he was disappointed in a supply of provisions, or some of his captains were not to be found or were not in readiness to start: at last, after he had lain for more than a year in the port of Hals体系, or Hedeby, a port in Denmark, the king of Denmark, who was not a man of much courage, the Danish king, the King of Denmark, found the ship broke out in the fleet, and the enterprise was abandoned. It was to help him to meet this danger that William revised the odious tax called the Danegeld.

William the Conqueror and his eldest son Robert, to whom he had promised after but afterwards refused to resign, his hereditary dukedom as narrated in the article Normandy. It came to a conclusion of arms, in which the father and son are said to have occasion encountered without knowing one another.
when the old king was wounded in the hand in the unnatural combat. This was while William was besieging the castle of Gerberoy, into which his son had thrown himself. There he was eventually rescued by the intervention of Queen Matilda. It was another quarrel about Normandy however with Philip I. of France, who had taken the part of Robert, that cost William his life. In the summer of 1067 a sasarem of Philip's on the constancy of his brother Godfrey, was encountered, and the latter, who was still ill at Rouen (lying-in, as Philip phrased it), infuriated the proud Norman; he swore that at his churching he would set all France in a blaze: as soon as he was able to draw breath, he collected all those who were at the city of Mante, formerly belonging to Normandy, which he took, and immediately ordered to be set on fire. This was on the 10th of August. He was enjoying the sight of the conflagration, in which many of the inhabitants perished, when his horse stumbled on some boulders, and threw him forward on the pommel of the saddle, by which he was so much injured that, being carried back to Rouen, he never again left his bed, but died there on the morning of the 9th of September following, in the fifty-eighth year of his age and the fifty-first year of his reign.

What manner of man the Conqueror was may be sufficiently gathered from this outline of his history. His character has been graphically sketched by the Saxon chronicler from personal knowledge—"as for we looked on him," said he, "and some Norman, but also an Englishman (lieg-ing his hereditary foe)," The feature that had chiefly impressed itself upon this close observer was what he calls his sternness, by which he seems to mean his unyielding bent of will and indomitable character. Three times in the course of his description he remarks this. But while he was stark beyond all measure, and very savage to those who withstood him, the honest chronicler states, on the other hand, that he was mild to good men who loved God, and that he was a very wise man, as well as very much more worthful and strong than any of his ancestors. William indeed was far from being all devil, any more than his father (Robert le Diable), whom he seems to have a good deal resembled, and who was complimented by his contemporaries as a typical man of instinct, as well as with the other expressive surname by which he is commonly remembered. With all his ferocity, William evinced throughout his life a reverence both for the ordinances and the ministers of religion; and, although he would not suffer other his tyranny and popery first within his kingdom an ecclesiastical dominion separate from and independent of that of the crown, he showed himself anxious on all occasions to maintain the respectability of the church by promoting able men to the chief places in it, as well as by his own personal exemplification of its legal rights and duties. He was eminent with the qualities, both moral and intellectual, that raise men above their fellows, is abundantly proved by what he did. Few men have projected the influence of the genius that surrounded him, and his character was the outcome of the Norman dynasty in England. In moral disposition William was passionate and ruthless; but he does not appear to have been vindictive, nor even, properly speaking, cruel or bloodthirsty, notwithstanding the destructive character of some of his military operations. There was nothing weak, nothing little about this great king. In his latter days, the chronicler intimates, he fell into the vice of avarice and greediness; but this love of money was only one of the forms assumed by his love of power. On the contrary, so utterly mystic was the whole of the forms in which the energy and ardour of his character were displayed was his passion for the chase. So much he loved the high-deer (ha ha door), naively writes the Saxon annalist, as if he had been his father. It is plain, he was not an idle man. As he frequently rode for the chase he received quite as much of his affections as his children, and somewhat more what than his subjects. He made laws, says the chronicler, that whoever should slay harm or hind, him and his kindred. As he feared and the coasts of his Angevin counties he made laws upon the assembly of the principal persons of the greater the year 1070.

The principal portion of the laws of the Conqueror that has come down to us consists of a capitation which is supposed to have been drawn up and agreed upon by the principal persons of the greater the year 1070. This is the most part a selection of the laws previously in force in the Saxon times, according to their last general revision by Ceante the Great. It exists both in Latin and in Romance, or old French, text. The first text is that preserved in the history attributed to Inglaphus, has usually been reckoned the original; but Sir Francis Palgrave, who has printed both versions from better manuscripts than had been before employed, in his 'Rise and Progress of the English Con- queror, William I.,' has advanced some reasons for believing that these laws of the Conqueror were most probably originally written in Latin, which was the language in which legal documents were common, and that they were subsequently translated for an account of the memorable survey of the kingdom completed by order of William in 1066, see the article DOMESTIC-BORROW (II.)

The wife of William the Conqueror was Matilda, daughter of Baldwin V., Earl of Flanders, named the Gode. He married her before he acquired the crown of England, and she died 2nd November, 1083. Their children were Robert, whom his father called Gambart (Rondelis, and Courtouche (Shortsallah, who died a prisoner in the castle of Cardiff in 1194; Richard, who was said to have lived to the age of eighty; William, whose death is not chronicled, William, who was succeeded on the English throne; Henry, who succeeded William; Cecilia, who became abbess of the monastery of the Holy Trinity at Caen, and died there 1210, who married, first, the count of Bremgarten and Richmond, but died without issue; Adela, who died young before the Conquest; Adela, who married Stephen, Earl of Blois, by whom she became the mother of Stephen, king of England, and who afterwards took the veil, and died in the Norman convent at Mortain, 1137; Gundred, who married William de Warren, Earl of Surrey, and died in childbirth at Castlemere in Norfolk. 27th May, 1065; and Agatha, who was converted to Al- phonsus, king of Leon and Castile, and died before her marriage. Their eldest daughter was Maud, daughter of Ingelric, a Saxon nobleman, who afterwards married Ranulph de Peveril.

WILLIAM II., King of England, named by his French and Norman contemporaries Le Roux, and by the English TG, the Red-Haired, or the Red-haired, is the second of the three surviving sons of William the Conqueror, and the last of the Norman kings. This was the case after the death of the celebrated Lanfranc, whom, in 1083, his father had called from his retirement at Bec to preside over the newly-founded monastery of St. Stephen, at Caen, and whom he afterwards, in 1070, made archbishop of Canterbury. Lanfranc was the man he had chosen not only as an instructor in learning and piety, but in the art of war, and it was from Lanfranc that Rufus received his knightly character. He appears to have been of a bold and forceful character. His father, who saw himself in his own of his own character than in his eldest son, the thoughtless and indolent Robert. A few days before his death, the Conqueror, having assembled around him his three sons, took those of his prelates and barons who were with him, and called them to his bedside. He said that he never thought one day of his departure, that no matter how he might fall to William; and he advised that prince, who was present (Robert was not), to repair immediately to England, giving him at the same time a recommendation letter to the king of England, and the next day he died. His body was embalmed, and was carried to the castle of Dover, Pevensy, and Hastings, on which matters, see the brothers of his father; he then hastened to Winchester, where he also was buried in the church of the royal treasury, William
de Pont de l'Arche, to give him his keys; and finally he presented himself before Lanfranc, to whom he had already forwarded his father's letter by a confidential messenger. Lanfranc a few days after assembled a council of the prelates and barons, and, by one of his propositions, that William should be declared king; and he was accordingly crowned by the archbishop at Westminster, on Sunday the 28th of September, 1087. The commencement of his reign is dated from that day.

The last claim to the throne of the Red King had to address himself, was to defend the throne which he had thus mounted against his elder brother, Robert, who at the time of his father's death had been living in exile and power. But the death of the last remaining of the house of Blois, which was in the dominion of the king of France, soon made his appearance at Normandy, and so strong a claim was made on the throne of the Red King as to be acknowledged as duke of Normandy. It may be doubted whether he would not have been satisfied with this ancestral inheritance if he had been left to himself; but this, in the circumstances, could hardly be. His chief instigator was Odo, the bishop of Bayeux, who, in the latter years of the preceding reign, had fallen under the displeasure of his half-brother the Conqueror, and was now eager to avenge himself by the dethronement of Rufus. Many others of the English barons and Normans of the house of Normandy, in both countries were strongly averse to their separation, as involving the inconveniences and risks of a divided allegiance. Odo is said to have arranged his plans with his friends at the festival of Easter, 1088, which was kept by William of Winchester and Robert at Forest of Seine, which was one of the last meetings of Pevensey and Rochester, with Odo in the interior, and Eustace, earl of Boulogne, in the latter, were both compelled to surrender; and the rebels, after some further ineffectual resistance, soon everywhere threw down their arms. The union of the two kingdoms, both in the mind and in the heart of the people, was speedily followed by a revolt of many of the Norman barons against Duke Robert, who, with difficulty was able to maintain his ground, even with the assistance of his brother Henry, to whom in his necessity he had recourse. This, however, did not avail to the recovery of the loss he had sustained in England. [Henry I., vol. xii., p. 118.] After this civil war had gone on for some time, and Normandy had been reduced to a state of almost complete anarchy, William landed in that country at the head of an army, in January, 1089, and joined his brother, making a revolution in England speedily followed by a revolt of many of the Norman barons against Duke Robert, who, with difficulty was able to maintain his ground, even with the assistance of his brother Henry, to whom in his necessity he had recourse. This, however, did not avail to the recovery of the loss he had sustained in England. This was the moment when he could be pressed; and he soon managed to raise the required sum, not, as an old writer expresses it, by merely fleecing his poor subjects, but rather, as it were, by baying off their skins. The people of Normandy in general submitted quietly enough to this transfer of power, and the new king, in Normandy, was received as a new lord; but the Manceaux, or inhabitants of the district of Maine, Robert's right to which he disputed, rallied around his rival claimant, Helie de la Fleche, and attempted to set William's authority at defiance. This opened the way for the Conqueror to land his forces on the Continent in 1100; he was hunting in the New Forest when a messenger arrived with the news that Helie had surprised the town of Mans, and was besieging the Nor- man garrison in the ruined castle of the latter. Rufus immediately set out, and after a battle fought near the sea-port of Dorset, where the Normans were defeated, he left the castle in ruins, and, retreating into France, he was defeated by the duke of Normandy, and forced to make a treaty with him. The treaty was signed at the castle of Aumale, in the presence of the king and the duke, and was ratified by the king and the duke, and was ratified by the king's son, William the Steward, who was then a young prince, and by the duke's son, Henry, who was then a young prince, and by the duke's son, Henry, who was then a young prince, and by the duke's son, Henry, who was then a young prince, and by the duke's son, Henry, who was then a young prince.
have not even assigned to him any natural children, notwithstanding all the licentiousness that is attributed to him in his private affairs. The chroniclers, who were all at that time sinners, have drawn his character in the darkest colours, and it may be presumed that he is indebted for some portion of the infamy and malversation they have heaped upon him to the manner in which he treated the church, of which he was throughout his reign the systematic oppressor and despoiler. His conduct in regard to that matter is detailed in the article Anksilm (ii. 57). At the same time it is sufficiently clear that neither as a man nor as a king did he much care for restraints of any kind more than those of royal dignity and the rights of property, and the desire of undisputed sceptre, and in the main regardless of everything except his own interests and passions. He was also however not without some of the better points of his father's character, sharing largely not only in his courage and energy, but likewise in his political talent. Rufus, with all his ruffiansm, too, had a taste for some of the true splendidours of civilization, and showed that he was not altogether sunk in sensuality by devoting part of his wealth to architecture, the only kind of fine arts which a king could in his day do much to encourage. Besides other erections of less magnificence, he was the builder of the first Westminster Hall. The commissioners of the Fine Arts, in their Report, dated 24th March, 1843, state that 'they have reason to believe that three-fourths of the space occupied by William Rufus occupied the same area as the present building.'

WILLIAM (HENRY) IV., king of England, was the third son of George III., and was born at Buckingham House, on 21st of August, 1765. He was married, with his elder brothers, the Prince of Wales and Prince Frederick (afterwards duke of York), under the care of Dr. Majendie, till the year 1771, when a separate establishment was formed for the two elder princes, and Prince William was sent to generalterms, with his younger brother Edward (afterwards duke of Kent), under the superintendence of Colonel Bude, a native of Switzerland, who afterwards became private secretary to the duke of York. It having been determined that he should enter the navy, he was, on the 14th of March, 1779, rated as master and commander of His Royal Highness's frigate, of 86 guns, then bearing the flag of Rear-Admiral Digby at Spithead. The Prince George soon after joined the Channel fleet, under the command of Sir Charles Hardy, and in the end of the year sailed as one of the squadron sent out from Rochefort to Gibraltar as a supple-
ing for the garrison. On the passage out they fell in, on the 8th of January, 1780, with a Spanish fleet of store-
ships, under the convoy of seven men-of-war, and took three of them; twenty in number, with the largest of the war, the Guipusecano, of 94 guns. Rodriguez, the Prince William, 'in respect to his royal highness, in whose presence she had the honour to be taken.' In this first affair however in which his royal highness met the enemy there was no actual collision. But eight days after, on the 23rd of April, fourteen ships of the line, commanded by Don Juan de Langara, was encountered off Cadiz, and a sharp though short engagement ensued, which ended in the capture of several of the enemy's ships and the destruction or dispersion of the rest. Rodney, having then proceeded to the Bay of Gibraltar and thrown in his supplies to the garrison, lay there for about three weeks, during which time his royal highness often visited the rock. The Prince George returned in the division under the command of Admiral Digby, which anchored before the port, and on the passage fell in with a French convoy bound for the Mauritius, of which he captured three store-ships and a man-of-war; and his royal highness found himself again in England by the beginning of May.

Having made two, or three short cruises in the Prince George, he then went out a second time to Gib-

raltar in that ship in the spring of 1781, in the fleet commanded by Admiral Darby. After this Admiral Digby, who was now promoted to the rank of admiral and transferred from the Mauritius to New York in America, which he reached on the 24th of August. While his royal highness remained here, which he did throughout the winter, lodging in the town, it appears that a plan was arranged by some of the revolu-
tionary parliament, with the intention of getting possession of his person; but the attempt was never actually made. In the autumn of 1782 he was, at his own request, transferred on board the Warwick, 60 guns, commanded by Captain Elphinstone, afterwards

Lord Keith; from which however he was soon after, by the king's orders, removed to the Barfleur, commanded by Sir Stanhope. He sailed with this ship, then lying off Staten Island, that he made his first acquaintance with Nelson, at the time commanding the Albermarle frigate, whose fast friend he ever afterwards continued. In the early part of 1788 Sir Samuel, now Lord Hood, arrived with his fleet at Port Royal, Jamaica; and his royal highness remained here and at the Havana, to which he proceeded in the Fortunee frigate on the sailing of Lord Hood for England, till midsummer, when he returned home in the Fortunee, in which he reached Spithead on the 20th of June, having seen the capture of the French man-of-war, on which he set out 31st July, 1783, attended by General Bude and Captain Merrick, and in the course of which after being joined at Hanover by his brother Frederick, the styled Bishop of Cambridge, he visited Berlin, where two young English princes saw a great deal of France, the Great, Luneburg, where they spent a winter, Gtin-

gen, Hesse-Cassel, &c., after which Prince William pro-
cceeded alone through Switzerland to Savoy and Piedm-
ent, where he visited Prussia, and returned to Italy, where he spent the winter. Having come back to England in the spring of 1785, he was, after the usual examination, passed as a lieutenant on the 17th of June, and appointed first lieutenant of the Hebe frigate, in which he soon after sailed for a voyage to the South Sea, and of the 17th of July, 1783, he was, as a reward of his royal highness, having previously risen to be second lie-
tenant of the Hebe, was removed to the Pegasus, and re-
ceived his commission as captain. In this ship he soon after sailed for Newfoundland, thence to Halifax in Nova Scotia, and then to Antigua, to which place Lord Nelson commanding on the Leeward Islands station in June, 1787, he was ordered to Jamaica, from which how-
ever he soon after took upon him to return without instruc-
tions to Lisbon. He was irregularly retained at Port-

quebec, but, after staying there a short time, he ventured again to take his own course, and set sail for England. He arrived at Cork in December, but was immediately ordered to repair with his ship to Plymouh; and when he got there, he was appointed on board the Prince of


herself, with his brother the Prince of Wales, from his first entrance upon public life, to the party of the Whig opposition; but he also followed the prince in giving his support to Pitt after the commencement of the war with France in 1718. On the return of Pitt to power however, after the ejection of the Addington administration, in 1804, he again joined the opposition with the prince and the Duke of Sussex; and after Pitt's death he gave a zealous support to the new ministry of Fox and Grenville on all subjects except only the abolition of the slave-trade, which he opposed successfully; and the consequence of this was the conviction of the Sicilian rebels, and a vote of censure against Sir William Amory, with the avowed design of ascertaining by a new election the sense of the people on the measure which had been thus for the present defeated or abandoned.

The new parliament assembled on the 14th of June, and the general appeal to the people was made in the same way as shown by the second reading of a second Reform Bill being carried in the House of Commons on the 4th of July by a majority of 367 to 251. It was not till the 19th of September that the House came to a vote on the third reading of the measure, and the opposition was defeated by a majority of 236. The measure however was defeated in the Upper House on the 3rd of October, by the second reading being negatived by a majority of 199 to 156. On the 20th parliament was prorogued.

A new session commenced on the 6th of December; and on the 12th Lord John Russell introduced the third Reform Bill, the second reading of which was carried on the 17th by a majority of 324 against 162. If the friends of the measure had not met with one more numerical and political success, that its opponents were growing weary of the contest, and were hopeless of ultimately averting it. On the third reading nevertheless, the vote upon which did not take place till the 19th of March, 1832, the opposition mustered again their former forces, but the motion was defeated by a majority of 355. This time the measure was also so far successful in the Lords that the second reading was carried in that House, on the 13th of April, by a majority of 194 against 175. But on the 7th of May ministers were defeated by a majority of 111, and by a majority of 122 against it. It received the royal assent, and became law, three days after.

The bringing about of this change thus occupied, almost to the exclusion of all other measures or questions, the first two years of the reign of William IV. The action of the ministry was directed towards the accomplishment of the great project of extending the territory of the country in Europe. The碳酸一钠的高性手段, from which the memorable movements on the continent of Europe with which the accession of a new king in England changed to be coincident. The publication of the ordinances of Charles X. was followed by the new machinery of government, set up after King William's accession: then rapidly followed the revolution of the Three Days in Paris, the dethronement of Charles, the transference of the French crown to the duke of Orleans, and the close of another month, the publication of the order of the minister in Brussels, which terminated in the separation of Holland and Belgium. In England the first symptom of wide-spread popular uneasiness, dissatisfaction, and tendency to outbreak was the commencement of the Exchequer fire which alarmed the country in the months of September and October. The new parliament, elected since the accession of the new king, met on the 26th of October. On the 7th of November immense excitement was occasioned in the metropolis and elsewhere by the report of the resolution of the House of Commons, which was ordered to be drawn up by the responsible advisers of his majesty that he did not venture with safety to his person to dine on that evening with the lord mayor and corporation of the city of London in Guildhall. This resolution was from the orders of the Duke of Wellington, Sir Robert Peel, and the other ministers, on Sir Henry Parnell carrying the motion in the House of Commons for referring the settlement of the civil list to a select committee, by a majority of 324 against 162. His majesty's administration was in office under the banner of parliamentary reform. Meanwhile commotion and confusion were spreading on the Continent. Besides some minor eruptions of the same kind, the insurrection in Poland broke out— an unhappy attempt, which was entirely unsuccessful.

On the 1st of March, 1831, Lord John Russell, as the organ of the cabinet, and, as was universally believed, with the concurrence of his majesty, moved for the first Reform Bill. On the 22nd of the same month the second reading was car-
defeated on the address by 309 against 302. They main-
tained the struggle for six weeks longer; but at last, up
upon Lord Russell's motion against them, on the Irish
titch question (the famous appropriation clause) by a majority of 295 to 258, on the 7th of April, they
resigned the next day. The king, understood to be
now thoroughly hostile to his old friends, in vain attempted
a further resistance; by the 18th the Reform party were
again in power, with Lord Melbourne as premier. But to
Lord Durham, Lord Stanley, Sir James Graham, Lord
Ripon, the duke of Richmond, Earl Grey, and Earl Spencer,
who, having all belonged to the original Reform
party, had the space of time to hold office, died Lord
Brougham. Lord Melbourne's administration lasted for
the remainder of the reign. Its most important measures
were the several municipal reform acts. [Borough.] Williams,
1 died and, after a short illness, on the
morning of the 20th of June, 1867. He was succeeded by
Queen Victoria.


WILLIAM of Wykeham. [Wykeham, William of.] WILLIAM of NEWBURY (in Latin, Gulielmus Nebrigensis) is said to have been born at Birdlington, in 1164, and that his life had been passed on
whence he sometimes designs himself Pavus, or Petit. His
common name he derived from the monastery of New-
bury in Yorkshire, of which he was a member. Nothing
more is known of his personal history, except that he is
described as a man of extreme disapprobation of the
ric of St. Asaph on the death of Guargr of Monmouth in
1165, and that he appears to have been alive in 1220. He
is known as the author of a Chronicle of England, which
came to him in the year 1191, and is written in Latin
than was then common. It was first printed in
1260. at Antwerp in 1297, under the title of 'Gulielmi
Nebrigensis Rerum Anglicarum Libri V.' The subsequent
ditions are, 'Gulielmus Nebrigensis de Rebus Anglicis,
eum nota. pro parte, &o., Pars I; 1190, and 'Gulielmus
Nebrigensis Historiae Ave Chronica Rerum Anglicarum,
Libris quinque, a codice MS. pervetusco in Bibliotheca
Thomae Sebright, Bar.; Studio atque Industria Th. Hearns,
qui e prater Joan. Picardi annotatione, &c. ...
was adjut. 3 vol. to., Oxon. 1719. William of
Newbury is a keen castigator of the British legends
tailed by Geoffrey of Monmouth.

WILLIAMS, JOHN, lord keeper of the great seal of
England, and afterwards archbishop of York, was the son of
the Earl of Pembroke, and was educated in England and
in Wales, where he was born on the 25th March, 1592.
He received his earliest education at the public school at
Rutland, and entered a student of St. John's, Cambridge,
under the vacations of 1598. He was afterwards connected
with a great Welsh family, and was early looked upon as one likely
to be of distinction in the principality. 'One thing,' says
his entertaining biographer, Hacket, 'put him to the blush
and the little shame, that such as had bigger spleens would
laugh at him for his Welsh tongue. For those who knew
him at his admission into St. John's Society, would often
say that he brought more Latin and Greek than good
English with him. This also plucked advantage after it:
for it made him a very retired student, by shunning com-
pany and conversation, as far as he could, and the
rudeness of his native dialect.' His studious retirement
does not seem to have been of long duration. He
was largely supplied with money, and distinguished himself at
college by a gay life and profuse expenditure. 'From a
year old,' says the historian, 'he began to learn to
hold money, for he did not only lay out, but scatter,
nspending all that he had, and somewhat for which he could
be trusted. Yet he was a diligent and ardent student.
1335 and between the years 1538 and 1539, he
acquired a facility in many of the principal
languages and applying terms of art. When he afterwards
sat on the bench of the Court of Chancery, and lawyers
who professed a contempt for his legal acquire-
ments, and who were content to puzzle him with pedantic
technicalities, he turned the tables by the application of
upon his old studies in scho-

dom. He read the best, he heard the best, he conferred
with the best, exercised, committed to memory; despised
that which he never did so much in this unwearied industry as
himself desired, he did far more than all that did highly value
him could expect. All perceived that a fellowship was a great deal too little for his head and heart. As he went on,
that went the pace would quickly go farther than St. John's
walks.' In 1625 he took the degree of master of arts.
He entered into holy orders in 1609, accepting a small
living in Norfolk, and in 1611 he was instituted to the rectory
of下一代. [Borough.] When he entered
office, he added his name to the charter of incorporation
of the foundation of his subsequent greatness was laid by his
being chosen chaplain to the lord chancellor Egremont. He
had been able to secure the favourable notice of King
James by his conduct in relation to a slight dispute be-
tween his majesty and the university of Oxford, and
when he had formed his new office, 'a nest for an eagle,' as Hacket calls it, gave
him such access to the royal person as enabled him to
profit by the favourable impression. 'The chaplain
understood the soil upon which he had set his foot; that
as rich and fertile, able to grow good tobacco, to
yield a crop after the dimensions of his desires.' Fortunately
for himself, he refused the offer of remaining in his chaplany
under Bacon; perhaps his worldly shrewdness taught him
that the soil was undermined beneath. He
had been chosen chaplain in ordinary to the king, in 1619, he preached before James at Theobald,
and the sermon was printed by command of his master.
who soon afterwards gave him the rich deanery of
Newbury. But Williams could only look upon that
advancement as a step towards the desirous object of
being named to the archbishopric of Canterbury, and desiring to befriend Williams, recommended
him to seek the patronage of Buckingham. He
developed the friendly hint, and acted the part of apostle in reces-
in the conscience of the favourite's Roman Catholic
belief. On the 11th of April, 1621, he was named to the
church of Canterbury. Of parts and talents, a good example of
the elements of the doctrinal belief of the Church of England,
which he drew up on this occasion, twenty copies were
printed by order of the king. It was by the advice of Wi-
lliams that Buckingham adopted the bold project of ser-
vice, or the procuring for himself and his victims such
objects as the foundation of this church, of his
voters, and the introduction of the English prelates
into the counsels of the sovereign. The project was more successful than ordinary human foresight
could have anticipated, and though it was an unpopular
measure to renew the practice of committing the great
to the hands of an ecclesiastic, the favourite's gratitude
overcame its caution, and the order of the
was at his command, a crowd of court spies, whose
information he turned to his own advantage. When the Mar-
quis Inoico, the Spanish ambassador, had succeeded in
injuring James into the belief that he was a prisoner in
the hands of Buckingham, Williams was able to inform him
of his extensive influence, and to suggest a remedy. Buckingham however appears to have
soon entertained a fear that the lord keeper was seeking
too great a share of independent power, and his run was
received on. Laud, whom he was the first to
make a candidate, he believed, was not percet that the keeper was sinking, 'he shunned him,' says
Hacket, 'as the old Romains, in their superstitio, walked
from that soil which was blasted with thunder.' Laud
was a tall, tall man, and with a facility in which the
miss is father to the thought. In the meantime
Buckingham himself sunk in the favour of James, and
Williams remained lord keeper till the accession of Charles
when, in October, 1625, he was deprived of his
bishops to the minor orders and of his
the House of Lords, but he was not a man to be intimidated.
He retained his place on the bench of bishops, and, as far
as his High Church principles would permit, supported the
popular cause, and exerted himself in promoting the Pei-
tion of Right. His relentless rival Laud raised against him, in the Star Chamber, a charge of betraying the king's secrets, contrary to his oath as a privy councillor. He was convicted of subornation of perjury in defending himself from this charge, fined 10,000l., suspended from his offices, and fined fashion and a withdrawal from the House of Commons, which subsequently dissolved. He went to Germany and then to Austria, where he was sent to prison. Since the meeting of the Long Parliament in 1640, he was re-elected, and resumed his seat in the House of Lords. A revolution had now taken place in the court; he was received into favour, and in the following year translated to the archbishopric of York, Dr. O. became bishop of that see in 1649. He was sent to Scotland in 1650 to arrange peace, and was afterward sent to Wales, and held out Conway Castle for the king. He died on 25th March, 1650. Clarendon charges Williams with being vain, peridious, and revengeful. Woulton and others accuse him of having been a peremptory and injudicious magistrate. The official history of the time is wanting. But he was a most independent judge, and his employers engaged to confine him to the commercial department. Young Williams soon displayed an inclination for the workshop rather than the counter, and his master, Mr. Tonkin, found it to his interest to employ him in executing orders which required peculiar delicacy and skill. He would also frequently volunteer his services for bellying down similar out-door employments. While thus employed, Williams became connected with companions whose irreligious habits threatened to exert a most fatal influence upon his character; but on a Sunday evening early in 1641, while walking in the street for some dissipated companions with whom he intended to spend the evening at a tavern, he was recognised and accosted by Mrs. Tonkin, the wife of his employer, who was then on her way to the Tabernacle, Moorfields. She accosted him and engaged in conversation with him, and one of the religious community at the Tabernacle, joined a class of young men formed for the purpose of mutual improvement, and became an active Sunday-school teacher. Missionary operations were then exciting the lively interest of the Tabernacle congregation. Matthew Wilks was exerting himself to extend a sense of their importance; and at one of the numerous meetings held with this view, Williams became impressed with a strong desire to devote his talents to the service of the cause of Christianity, and in some islands the cruel rites of idolatry had been entirely abandoned. So far from the difficulties of the missionaries being removed by this happy change in their circumstances, they were rather increased by their success; the number of agents in the field being totally insufficient to supply the necessities of those people who were already emerging from barbarism. Williams, having been engaged in the work of labouring with very little success; but before the time when Williams offered himself to the Society, many of the natives had embraced Christianity, and in some islands the cruel rites of idolatry had been entirely abandoned. So far from the difficulties of the missionaries being removed by this happy change in their circumstances, they were rather increased by their success; the number of agents in the field being totally insufficient to supply the necessities of those people who were already emerging from barbarism. Williams offered himself to the Society, many of the natives had embraced Christianity, and in some islands the cruel rites of idolatry had been entirely abandoned. So far from the difficulties of the missionaries being removed by this happy change in their circumstances, they were rather increased by their success; the number of agents in the field being totally insufficient to supply the necessities of those people who were already emerging from barbarism. Williams offered himself to the Society, many of the natives had embraced Christianity, and in some islands the cruel rites of idolatry had been entirely abandoned. So far from the difficulties of the missionaries being removed by this happy change in their circumstances, they were rather increased by their success; the number of agents in the field being totally insufficient to supply the necessities of those people who were already emerging from barbarism. Williams offered himself to the Society, many of the natives had embraced Christianity, and in some islands the cruel rites of idolatry had been entirely abandoned. So far from the difficulties of the missionaries being removed by this happy change in their circumstances, they were rather increased by their success; the number of agents in the field being totally insufficient to supply the necessities of those people who were already emerging from barbarism.
tion to the great design of teaching the gospel, to introduce among the heathen the arts of civilized society. In October, 1816, Williams married Miss Mary Chaufer, who proved an invaluable coadjutor in his future labours; and on the 16th of November following Mr. and Mrs. Williams, in company with several other missionaries, embarked for Sydney, whence after a short stay they proceeded, after calling at New Zealand, to Eimeo, one of the Society Islands, which they reached exactly twelve months after leaving London. Here they remained for some months, Mr. Williams continuing the mission on the island, while his夫人 and the missionaries removed to Hoshine, another island of the same group, where they were very gladly received by the natives. The fame of their arrival brought visitors from the surrounding islands, and the urgent solicitation of the king of Raiaetea (the Ulte of Captain Cook), induced Messrs. Williams and Threlkeld to remove to that island, which is the largest and most central of the Society group. Its population was at that time about 1300, but its political influence was far greater than that of the other islands, and its principal chiefs received divine honours, as well as civil allegiance and tribute, from the neighbouring isles. 'From time immemorial,' observes Mr. Prout, 'this island had been the focus and source of the abominable idolatries which prevailed, demonizing the inhabitants of its own and the surrounding shores. Here were to be found the types of the manifold usages, even the most degrading and cruel, which had become the customs of the race; here were the archives of their religious legislation, and the index to the sacrilegious actions and altars of the surrounding sea.' Among the inhabitants of this island, Williams found them extremely debased, and their idleness apparently inveterate. They were also so scattered over the island as to render collective instruction almost impossible. It was indeed evident that their habits must be entirely remodelled before the natives could hope to become at all useful to society. Without neglecting the principal object of his mission, Williams induced the Raiaeteans to collect themselves to one spot, and to build habitations for themselves, as well as a church and a school. Having thus erected a comfortable house in the English style, presenting a model to which the natives were encouraged to look both in its structure and conveniences, and in the furniture with which it was adorned; almost everything being done by their own hands. The natives were thus taught not only to appreciate the comforts of civilized life, but to obtain them for themselves, by constructing houses with two or more apartments, with wooden floors, framed wainscoted with coral lime, thatched roofs, well-stocked gardens, and lawns, and bedsteads covered with the finest structural leguminous leaves and hangings. They were also instructed in boat-building, and their diligence and ingenuity were excited by judicious rewards in the form of nails, lunes, and other useful articles which the missionaries procured from England. Procured the spirit of imitating the visible necessities, and to put them in the right way for supplying them, the missionaries were at length gratified by a request to attend a meeting convened by the natives for the purpose of improving their physical and moral condition. This is not the place to rebut the charges which have been brought against the missionaries, of substituting a despotism of which they were the heads for that previously existing under the chiefs. The most weighty and circumstantial statements contained in such works as those mentioned at the end of this article; statements which bear the most undeniable internal evidence of sincerity and truth, and which have been corroborated by several persons whose testimony stands clear of the slightest suspicion of partiality. In May, 1820, upon the occasion of the opening of a new chapel at Raiaetea, at which more than 2400 persons were present, a complete code of laws was established by the votes of the people, and it differed from those previously introduced in other islands of the South Seas in the important point of the introduction of Christian principles. It was properly administered by a body of twelve elders, which had been formed by the natives, under the immediate superintendence of their instructors. Being desirous of extending to others the benefits which they enjoyed themselves, the Raiaeteans (as they were now called) were supported by liberal donations of such articles as they had learned to prepare for sale; and Mr. Williams laid the foundation of future commercial wealth by teaching the people to cultivate tobacco and the sugarcane, and to prepare sugar for the market. With this view he constructed a sugar-mill, the rollers of which were turned in a lathe formed by his own hand. The benevolence which prompted Williams to such exertions could not rest content within the narrow limits of the island. He remained long in Tahiti, and embarked in occasional boat-voyages. The intelligence received from time to time from other islands gave him a strong desire to extend the peaceful conquest in which he had so distinguished a part, and he perceived that nothing was more suitable than the planting of missions for the civil and religious elevation of the islanders. Although not seconded in these views by the directors of the Society, he was so fully convinced of the importance of the scheme that he determined to bring it effectually into execution, rather than abandon his project. He therefore visited Sydney about the commencement of 1822, and purchased a schooner of from eighty to ninety tons, called the Endeavour, in the hope that the Society would, upon full examination, support his views; and the necessary purchase of the vessel. He also made arrangements for promoting the rising commerce of the islands, and returned with several cows, calves, and sheep, presented by Sir Thomas Brisbane, governor of New South Wales. Having the use of some islands, Williams sailed from Raiaetea in the Endeavour, for the Herno Islands, calling at the mission-station of Aitutaki, where he endeavoured to carry into effect a long-cherished scheme for the discovery of the island of Raobog. He sailed from Aitutaki in the 5th of August, 1823, the result of the short voyage, and cleared up the report of a few of its natives upon other islands. Failing in his first attempt, he visited Mangai, and some other islands, but so length, as is described in the sixth chapter of his Missionary Deserts, by so much the better to discover the secret of the Herno, Leaving a native teacher there, with a promise of sending further assistance, the Endeavour shortly returned to Raiaetea, whence she soon sailed upon another expedition to Resutto and Rukatou. As the vessel was on such a purpose, the indefatigable missionary was preparing for a more distant expedition to the navigators and other islands, when his projects were suddenly checked, and he himself was involved in most painful embarrassments, by the circumstances of the employment in which he had procured the enactment of fiscal regulations by the governor of New South Wales, which greatly impeded the development of trade from the South Sea Islands, and rendered the retention of the Endeavour impossible. Deprived of his native friends (for the society had disapproved of the steps he had taken with regard to the ship, they having a very commendable jealousy of anything that could, even in appearance, tend to undermine the prosaic condition of the natives), he was thus compelled to send the ship, laden with the most marketable produce that he could collect, to Sydney, with orders for the sale of both ship and cargo. Grieved as he felt this disappointment, he did not escape with as much inconvenience in absence for a time, while he devoted his energies to Raiaetea, where
it was found necessary, from the frequency of destructive storms, to remove the settlement to the opposite side of the island.

In the autumn of 1825 Rarotonga and other of the Hervey islands were revisited by the Rev. Mr. Bourne, one of Williams's fellow-labourers, in the 'Hawea,' a vessel chartered for the purpose by the Society. In December of the same year Williams was joined by Mr. and Mrs. Pechell, who had appointed to go to Raratonga, in which he returned to Raratonga, but remained with him for some months at Raiaeta, before proceeding to their destination. In April, 1827, they obtained a passage to Raratonga, accompanied by Mr. and Mrs. Williams, who contemplated staying a few months there, and then returning to their vessel, 'Cordage,' which had been chartered in Rarotonga, but it was not until the following March that the vessel was in sight north of the island. Here Williams was informed that all efforts had been made to reduce the number of labourers on the South Sea Islands, and to reduce the voyage to a written form and a grammatical system. When at length prepared to return to Raratonga, he waited month after month for an opportunity of doing so, and, when long expected to be of no hope of a vessel, all hope within sight, he determined on it. In the meantime, however, having limited his knowledge of naval architecture, the total absence of assistance beyond what the natives could render, and the lack of iron and tools, of which he had a very small stock for the public, plans of the vessel were made, and the undertaking was the construction of a pair of smith's bellows, to obtain leather for which three of the four goats on the island were killed. It must have proved extremely mortifying to find that when the machine was completed it did not act properly, owing to a little oversight in the construction, but the perplexity was utterly terminated by the entire destruction of everything but the boards by rats, which surrounded at Raratonga. Undismayed by this misfortune, Williams contrived a blowing-machine, which was fully sufficient for the construction of the ship, and the plans and instructions and explanations as to the accomplishment of an important and useful object by means less complex than the machinery of civilized countries. Having to work in the trees, which were split by wedges, and having to steam-hammers, the native bellows, and splitting curved trunks. Cordage was manufactured of the bark of the Hibiscus; sails were made of native matting; and for oars were substituted cocoa-nut husk, banana stalks, and even the ship itself, which was used as a mission, was of iron-wood, or iron-wood, by means of a lathe constructed for the purpose, and the pipes of the rudder were made from a piece of a pickaxe, a cooper's adze, and a large hoe. By such contrivances, in the short space of fifteen weeks, was completed a sea-worthy vessel about sixty feet long and eighteen wide. Supplied with anchors of wood and stone, and with a crew consisting only of natives, Williams first tried his vessel, which he styled the 'Messenger of Peace,' in a voyage of about 170 miles to Aitutaki, which was attended with all kinds of difficulties, as well as with the breaking of the foremost through the inexperience of the native crew; and after a few days the vessel returned to Raratonga with a valuable cargo of pigs, cocoa-nuts, and coconuts. Shortly afterwards Mr. and Mrs. Buzacott arrived at Raratonga with a vessel, 'Cordage,' which enabled Mr. Williams to strengthen his ship before sailing for Tahiti, a distance of 80 miles, which he accomplished in safety. Being now fully determined to undertake his proposed voyage, he asked Williams if he could supply all the preparation for it. He however returned to Raiaeta, and was actively engaged in that and neighbouring islands for a considerable time before the great expedition could be commenced. On the 28th of May, 1830, the 'Messenger of Peace' left Raratonga on this important voyage, for the circumstances of which we must refer to the interesting narrative of the mission.
to carry out his long cherished design of visiting the island yet further westward, where as yet nothing had been done for the instruction of the savages. The expedition was proceeding successfully, and had reached the New Hebrides, when, on the 20th of November, 1859, a party from the ship landed at Dillon's Bay, in the island of Erromanga, where the natives, irritated, is reason to believe, by the barbarities perpetrated by the crew of a vessel that had previously visited the island, attacked them, and murdered Mr. Williams, then in the forty-fourth year of his age. Mr. Harris, who had been living for some time a missionary to the Marquesas. The intelligence of the melancholy event produced the most intense excitement both in the numerous islands where the apostolic labours of the late Mr. Harris had been performed, in his native Oxford, and the universal esteem which his character had obtained called forth the warmest expressions of respect and regret. Such remains of the body of Williams as could be subsequently procured (the greater portion having been devoured by the cannibals of Erromanga) were interred at Apia, in the island of Upolu. It is most gratifying to know that the benevolent work to which Williams devoted his life has not been checked by his untimely end, but that even upon the very island on which he fell the truths of Christianity have taken deep root with gladness.

Of the character of Williams it is unnecessary to attempt to form an estimate in this brief notice. To comprehend his self-denying zeal, his unconquerable perseverance in the pursuit of the philanthropic objects of his ministry, the fidelity of his holy trust, his great love of instruction, and the benevolence which marked his public and private actions, it is necessary to peruse the circumstantial narrative of his 'Missionary Enterprises,' a book replete with interest even to those who do not duly appreciate the multitude of great and noble works which have been the means of advancing, and so by his subtility, dexterity, and ingenuity, he got now to be a principal secretary, absolutely Lord Arlington's creature, and ungrateful enough.

Sir Joseph Williamson appears to have been a diligent and respectable public servant, who, in those times, could not have risen from so humble a beginning to the important situation of secretary, of commerce for business, or without some talents for continuance. Evelyn gives a disparaging account of him, from which the following is an extract. Having mentioned his appointment as secretary to Sir Edward Nicholas, he proceeds—Sir Henry Williamson is transferred to him, who, loving his ease more than business, though sufficiently able had applied himself to it, remitted all to his man Williamson, and in a short time let him into the secret of affairs, that, as he is a master of the French language, he may be able to advance him; and so by his subtility, dexterity, and ingenuity, he got now to be a principal secretary, absolutely Lord Arlington's creature, and ungrateful enough.

Sir Joseph was a musician, could play at 'jeu de poche,' and acted a part in acting a conversation, but inward with my Lord O'Brien, that, after a few months that gentleman's death, he married his widow, who, being sister and heir of the Duke of Richmond, brought him the 'Marquisate of Twickenham.' The marriage was conducted as they did before: She was much cenured for marrying so meanly, being herself allied to the royal family. (Evelyn's Diary, ii, 384.)

WILLIAMS (After Livingstone.)

WILLIAMS, SIR JOSPEH, a statesman of the reign of Charles II., was the son of the Rev. Joseph Williamson, rector of Birkeleyn in Cumberland. He came up to London, while yet a boy, in the capacity of clerk or secretary to the Board of Trade, and was agent for the arms of M. A. of St. Andrew's College, Oxford, in the service of whom he was admitted on the foundation of that college. He took his degree of B.A. in 1633, and immediately after went to France as tutor to a nobleman to whom he was recommended by Dr. Langbaine. He was afterwards elected a fellow of St. John's College, and in 1637, he took his Master of Arts degree.

After the Restoration he was appointed secretary to Lord Edward Nicholas, secretary of state, and on Sir Edward Nicholas being succeeded by Lord Arlington, he became secretary to the latter. He was appointed by Lord Arlington keeper of the State Paper Office in Whitehall. In 1667 he was appointed one of the clerks of the council in ordinary, and received the honour of knighthood. He was, in 1669, admitted into the most illustrious House of Lords, and in 1671, he was made a privy council to the earl of Sunderland and Sir Leoline Jenkins, at the treaty of Cologne. On the 27th of June, 1674, he was appointed secretary of state in the room of Lord Arlington, to whom, according to the custom of the time, he paid 6000l. in order to sit in the privy council. He was, in the same year, inducted into the privy council. The period during which Sir Joseph Williamson was secretary of state was one of subservience by Charles II. to the interests of France, with which power he entered into secret alliances, and of fear of the War Office. Sir Joseph Williamson was one of the first victims of excitement caused by the celebrated Popish plot, when the Tower, by the order of Commons, on the 18th of November, of granting commissions to Popish officers, but he was released by the king on the same day. On the 9th of February following he repaired the secretaryship of state, and was succeeded by the earl of Sunderland. In December, 1679, he married the baroness Clifton, widow of Henry, Lord O'Brien, and sister and heir to Sir Charles Stuart, Duke of Richmond, by whom he acquired large property and the hereditary office of high steward of Greenwich. Sir Joseph Williamson died in 1701, and his wife in the year following. He left 6000l. and a valuable collection of heraldic manuscripts and of notes, which was the property of the Library, Oxford; and he left 5000l. for the purpose of founding a mathematical school at Rochester, by which title he had been frequently returned to parliament. He died in 1701, and his heir, a brother of the earl of Richmond, in 1718.
However much these views may differ from those of modern physiologists, the idea of the brain being a congeries of organs is distinctly recognised. Whilst at Oxford Willis was a member of a philosophical society which is said to have lead to the foundation of the Royal Society of London. It was here, and at London, that he became the first to publish a work on the brain and nervous system, 'Pathologia Cerebri et Nervosi Generis Specimens,' Oxford, 4to. This work, in which he gave an explanation of the phenomena presented in convulsive diseases, hysteria, and hypochondria, was written at the request of the then governor of the hospital of St. Bartholomew's. He succeeded in explanation of the types of individuals, and not in the nervous system. To the attack of Hightmore, Willis repaid in a work entitled 'Adfectionum quam diciuntur Hystericae et Hypochondriacae; Pathologia Spasmodica vindicata,' &c., London, 1760, 8vo.

About the time of the publication of this last work, he lost his first wife, who was a daughter of Dean Fell. This event afflicted him much, and as a relief to his mind he conceived the idea of being a second marriage. He began to publish another work, which he never finished, entitled 'Pharmaceutica Rationalia,' of which the first paper was published at Oxford in 1762, and the second in 1765. This work, like his first, was a discussion of public questions, and especially of the principles of the chemical philosophy. His Latin style was neat and elegant. All his works abound in hypothesis, but they contain a great amount of sound observation, which renders them well worth perusal. Most of his works have passed through numerous editions, and the whole of them, with the title 'Opera Omnia Willisii,' have been published several times in this country and on the Continent. The comparative neglect into which they have fallen may be traced to the fact that but few of them have been translated into other languages. Willis was a man of great perception, and his writings in Sydenham, his successor in reputation, who rejected much of the hypothesis that burdened the works of previous writers.

Willis died of pleurisy, on the 1st of November, 1767. He was 70 years of age, and left an estate of 20,000l. He was performed in the church of St. Martin's Lane, every morning early, in order that he might attend before he visited his patients. At his death he left a bequest of 20l. a year for the continuance of this service. He also appropriated all his Sunday fees to charitable purposes. He discovered the mineral-spring at Astrop near Berkeley in Northamptonshire, and made it very famous, till the people of the place offending the well-known Dr. Radcliffe, made an attempt to destroy it, but to no purpose. He was a keen pupil in mathematics. He published the hypothesis that there were two English works said to be written by Willis, which were published after his death: the one 'A Plain and Exact Method for preserving (by God's Blessing) those that are well from the Infection of the Plague.' Written and dedicated from Dr. Willis's medical works. (Haller, Bib. Med.; Biog. Med.; Biog. Brit.; Aikin, Biog. Dict.)

WILLIAM BROWNE, an English antiquary of note, was born in the still more celebrated Dr. Thomas Willis, and by his mother's side of Robert Browne, of Frampton in Dorsetshire, was born at Blanford in that county, Sept. 14th, 1682. After passing through Westminster School, at which time he is said to have first imbued himself with a taste for the study of architectural and ecclesiastical antiquities, the neighbouring abbey being his favourite haunt, he entered Christ Church, Oxford, as gentleman-commoner. In 1677 he married Catherine, daughter of Daniel Elliot, of an ancient family, who bore him ten children.

This lady, who died in 1724, was herself a person of some literary pretension, and was author of a work entitled 'The Established Church of England the Catholick Church,' London, 1718, a performance which her husband appears to have thought very meanly of. On the Society of Antiquaries being formed in the year 1706, he became a member, and in 1740 the degree of LL.D. was conferred upon him by the university of Oxford. In the following year he testified his sense of the compliment by presenting to that body his valuable cabinet of English coins; he was also a consider- able benefactor to the British Library. In 1730 he became a fellow of MSS. Nor did his liberality confine itself to matters of that kind; for, in 1740, he contributed towards rebuilding Stony Stratford church, and in 1752 gave 200l. towards repairing the fine tower of that at Buckingham, for which he had presented to his alma mater nearly a half a century before, in 1705. He died at his seat, Whaddon Hall, Feb. 5, 1760.

That Browne Willis had a decided and disinterested passion for antiquarian researches cannot be doubted, since he devoted himself to it at a time when little regard was had to such studies, and indulged it beyond what prudence altogether warranted, considering the largeness of his family—five sons and as many daughters. As little doubt can be entertained that this was a taste for similar studies. His greatest and most important work is his 'Survey of the Cathedrals of England,' 3 vols., 4to., with plates, which appeared in 1727, 1730, and 1733. Of his 'Notitia Parliamentarum,' the conclusion was not published till 1750, although the first part had been printed in 1715. His last production was a 'History of the Town of Buckingham,' 4to., 1755. (Chalmers's Biographical Dictionary; Nichols's Literary Anecdotes.)

WILLIS, FRANCIS, was a student of Brazenose College, Oxford, and took holy orders in the year 1740. He was soon after appointed to the living of St. John's, Wapping, and afterwards to Greatford in Lincolnshire. Having a taste for the practice of medicine, he used to prescribe himself for those whom he thought too poor to pay for it, and he was often called to those in the neighbourhood so much, that in his own defence he obtained the degree of doctor of medicine from Oxford in 1759. His medical and philosophical studies induced him to take up the subject of insanity, and he was very successful in his treatment. It was on an occasion that he was asked in to take charge of George III., when the king was for the first time deprived of the use of his mental faculties. His treatment was successful in this case, and gained for him the reputation of a great physician. He is credited with the cure of a maniac and a maniac ' would make him quail more effectually than a chain or manacles.' (Wenslow, Physic and Physicians; Grant's Mag., vol. 77.)

WILLOCK, WILLOCKS, or WILLOX, JOHN, one of the earliest champions of the Reformation in Scotland, is supposed to have been born in Ayshire, about the beginning of the sixteenth century, and to have studied at the University of Glasgow in his earlier years. Nothing is known as to the period of his birth, but whether Franciscan or Dominician is not clearly ascertained. He visited England in the year 1541, having before that time become a convert to the opinions of the Reformers, and he was there subjected to imprisonment, as a matter of safety, till the second part of the same year. He was afterwards chaplain to the Duke of Suffolk, and on the accession of Mary of England he fled to Friends of William the Companionship in the suppression of the six articles of Henry VIII. He became Afterwards chaplain to the Duke of Suffolk, and on the accession of Mary of England he fled to France, where he was there patronised by the Duchess Anne, who sent him in several missions to Scotland. About the year.
he returned to reside in his native country, and preached the
doctrines of the Reformation in the town of Ayr. He
did not return to his own church, but continued to preach as a
debat with the principal champions of Catholicism in
Scotland. In 1559 he was cited, along with other reformers,
to answer for the opinions promulgated by him, and was
outlawed for not appearing; a circumstance attributed with
apparent justice to the influence of heresy on the part of his
Queen Regent. He now rose in popularity; large masses of
people flocked to his ministrations; and as the head of a
party he became sufficiently powerful to cause the rejec-
tion of a proposal by the humblest Regent, that the Regent
and his constant service might be placed at the
option of the people. He was one of the four ministers
appointed to assist the council of government on the depo-
sition of the Regent. In 1561 he was appointed one of the
superintendents who succeeded to some of the duties of the
Catholic bishops. He spent a great part of the remainder
of his life in England, but was moderator of several Gene-
ral Assemblies in Scotland from 1563 to 1568. The time
of his death is not known.

(Wadrow, Biographical Collections printed for the
Maitland Club, pp. 99-116, 449-453.)

WILLOUGHBY, SIR HUGH. The history of this un-
fortunate voyager is very obscure. A portrait is shown at
Wollaton Hall, Nottinghamshire (an ancient seat
belonging to the family of Wollaston), and in Derbyshire
that of Sir Hugh. Collins conjectures that 'Sir Hugh Willoughby,
Knt., of Ribby in Derbyshire, grandson of Sir Henry Willoughby,
who died in 1528, by his son William, who died before his
father, was the discoverer.' If this be true, Sir Hugh was the son of
William, by his wife Helena, daughter and co-heiress of Sir John Egerton, of Wil-
ne Hall in the county of Chester, and had himself a son
Henry (created a baronet by James I. in June, 1611), by his
wife Jane, daughter of Sir John, Bart., of Ribby in
Northamptonshire.

Clement Adams, in his narrative of Chancellor's voyage,
moments Sir Hugh in these terms:— 'To which office and
place [commander of the expedition fitted out by the mer-
chants adventurers in 1558], although many men
so experienced in matters of this sort himself considered, yet
one Sir Hugh Willoughby, a most valiant gentleman and
well born, very earnestly requested to have that care and
command committed unto him; of whom before all others,
both by reason of his goodly personage (for he was of
a tall stature) as also for his singular skill in the services
of war, the company of merchants made greatest account;
so that at last they concluded, and made choice of him
for the governor of this voyage, and appointed to him the
administration and command over all the
people. This appointment was confirmed in a licence to
discover strange countries from the king Edward VI., of which
a MS. copy is contained in a volume (Fauins, C., ii.) of the
Cotton collection in the British Museum.

This vessel which we have been able to
discove is that contained in the first volume of Hak-
luyt, purporting to be the journal of Sir Hugh Wil-
looghe himself, and incidental notices in Clement Adams's
account of Chancellor's adventures, and in the voyages
of Burrough and Jenkinson in 1576, in the same collection.
Among the Cotton MSS. already alluded to (Otho, E., viii.)
there is a list of the three ships fitted out for the expe-
dition, and of the names and offices of all persons em-
baed in them; and a journal of the voyage from the 10th
of May to the end of September, 1558. It has been much
injured by fire, but enough remains to show that it corre-
ponds exactly with what is printed in Hakluyt's work.

It appears to be in the handwriting of Michael Lok. Pur-
cussion of it (translated by him 469) ascribes the authorship
of Willoughby, his kinsman, subscribed by Sir Hugh, which will
now have, and keep as a relic of that worthy discoverer.

The expedition of which Sir Hugh Willoughby was ap-
nointed commander was fitted out by the mystery
company of merchants adventurers for the discovery of
regions, dominions, islands, and places unknown,' whose
governor was Sebastian Cabot. It consisted of three ves-
sels:—the Bona Speranza, of 120 tons, commanded by Sir
John Arden; the Speranza, of 110 tons, the pilot-ship, a
master and mate, and 36 seamen; the Edward Bonaventure,
Richard Chancellor, pilot-major of the fleet, captain of
160 tons, with a master and mate, minister, surgeon, and
50 seamen; and the Bona Confindentia, of 90 tons, under a
master and mate, with 22 seamen. The vessels were vic-
tually allowed for fifteen months. Six merchants embarked in
the admiral's ship, nine in the pilot-major's, and three in
the third vessel, and carried the sum of 2000l., which was
vested in a council of twelve. The council consisted
of the admiral and pilot-major, the masters of the three
vessels, the minister, three merchants, and the three masters'
mates.

The expedition sailed from Deptford on the 10th of May,
1553, but was detained in the river and off the coast by
baffling winds till the 23rd June. It fell in with the Nor-
wegian coast; some way south of the Ros Island, on the
24th of June, and then that the Regent, as the next best
station of the Danes in Finmark, the vessels were separ-
bated by a storm. Next day the Bona Speranza and the Bona
Confidentia once more joined company, but Chancellor's vessel
did not again fall in with them. Clement Adams relates
of their separation, derived from some mariners of the
Edward Bonaventure, is as follows:— 'The very same
day in the afternoon, about four of the clock, so great a
tempest suddenly arose, and the seas were so outrageous,
that the ships could not keep the commanded course, but some
were per force driven one way and some other, to the
great peril and hazard. The general with his loudest
voice cried out to Richard Chancellor, and earnestly re-
quired of him not to return; but if he went on in that
way, which he would keep company with him if he sailed still so fast, for
the admiral was of better sail than his ship. But the
admiral (I know not by what means) bearing all his air
was carried away with so great force and swiftness, that
he did not lose his patience; he corrected the captain
ship also, with the same storm and like rage, was dispersed
and lost us. The ship-boat of the admiral (striking against
the ship) was overwhelmed in the sight and view of the
marmers of the Bonaventure; and for them that went
abroad they meant not to touch, and as to the weather,
nothing of the ships what has become of them.' The narrative is
the diary attributed to Sir Hugh Willoughby corresponds
with this account in all essentials.

It appears from many journals referred to, that the Bona
Speranza and Bona Confindentia were tossed about in the
North Sea from the 30th of July to the 15th of September,
vanitily attempting to make Wardhus. On that day the
entered a harbour which we learn from Jenkinson was the
mouth of the river Arina, six days' sail west of Wardhus,
and one day's sail west of the Svisatoi Nos, the western
headland of the White Sea. 'This haven,' says the journal,
'runneth into the main about two leagues, and is a
breadth half a league, wherein are very many seal-bales
and other sea-fowre; over all the headland are very
great deer, foxes, with divers strange beasts, as elk
and such others, which were to us unknown and also won-
derful. There remaining in this haven the space of
sevennight, seeing the year far spent, and also the
weather was wettest, snow, and frost, and the sea had been
the depth of winter, we thought it best to winter there.
Wherefrom we sent out three men south-west to
search if they could find people, who went three days
journey, but could find none. After that we sent the
three westward four days' journey, which also returned
without finding any people. Then sent we three
south-east three days' journey, who in like sort returned
without finding of people or any similitude of habitation.
They entered the harbour of death (as it is called in the
margin of the Cotton MS., Otho, E., viii., p. 15) on the 18th
of September: they remained a week before resolving to
winter there; and they sent out three exploring parties, two
of which appear to have been at least six and one eight
days absent. This having been done, the date of the
Speranza's will, which Purchas says was in his possession, shows that some of the party must have
been alive in January, 1554. Nothing more is known of
their fate. In 1557 Stephen Burrough, who was with
Colombo to search for the Esperanza, the Bona Confindentia, and the Philip and
Mary, another ves-
bel belonging to the merchants adventurers, which
was also missing. At Kegor he learned from a Dona-
man, who spooned upon the ship, which was
in the English, and that the Bona Confindentia was lost, and that he
didn't bought her sails for his ship. Of the fate of the Bona
Esperanza he does not appear to have obtained any
intelligence. Anthony Jenkinson, in his account of his
voyage to Russia, written apparently between January and
April.
WILLUGHBY, FRANCIS, was the only son of Sir Francis Willughby, Knight, and was born in 1635. His father, who was in the service of the Duke of York to the education of his son, who was so diligent in his studies that it was feared he would injure his health. He early acquired great knowledge both of the classics and mathematics, and in the various branches of natural science. Willughby had a great passion for science, which, and his love of travel, led him to visit the Continent, and took his degree in Bachelor of Arts in 1656, and of Master of Arts in 1659. It was here that he became a pupil of John Ray, and a lasting friendship was soon formed between the master and pupil. Willughby had a great passion for zoology, to which he devoted himself, and the fruits of their labours were so great that they took great interest in the progress of natural science. Ray had at this time made great progress in the study of botany, and had already begun to reduce to harmony the confused facts which had been heaped together in a mass by the botanists of his day. Each time that a new species was discovered, Willughby was to do the same for zoology. The Pindarts of Gesner and Aldrovandus had been published, but the question that occurred to his mind was, How much of all this is true, and how much is false? To answer this question the science of zoology as it then existed, he set to work. For this purpose he went to Oxford in 1660, in order that he might consult the works on natural history in the libraries there. Shortly after the death of the Duke of York, he was obliged to resign his fellowship and leave Cambridge. The consequence was that the two friends made a tour on the Continent, visiting France, Spain, Italy, Germany, and the Low Countries, and the researches and observations on natural history: Ray examined plants, whilst Willughby attended to the animals. They returned laden with treasures, which Willughby immediately commenced working at, for the purpose of publishing a large work on ornithology, and a monograph of plants, with the help of the Duke of York, who was about to make a voyage to America, in order to add to his knowledge. But he died, in the midst of all his labours and in the prime of life, on the 3rd of July, 1672. He had published little, and thought his labours too imperfect to justify their publication. However, his friend Ray recommended one of his works, for three reasons, that he should allow him to publish his works: first, the glory of God; secondly, the assistance of others in the same studies; and thirdly, the honour of their native land. Upon receiving permission of his executor, and Ray became their editor. He also left Ray one of his executors, and committed to him the charge of educating his two sons Francis and Thomas. Francis, the elder, who was then only four years old, died in 1673, and Thomas subsequently became Lord Middleton. For this office, which Ray sacrificially fulfilled, Willughby left him sixty pounds a year, which constituted the chief part of this great man's income throughout his life.

Willoughby was the first writer to use the word "ornithology" in its modern sense. His work, "On the Ornithology of the Birds," was published in 1678. It contained a wealth of information on birds, as well as other animals, and was a significant contribution to the field of natural history. Willoughby's work was translated into French, Latin, and many other languages, and it influenced the work of later naturalists and ornithologists.

Willoughby's death was mourned by his contemporaries, and his name is remembered today as a key figure in the history of natural history. His legacy lives on in the field of ornithology, and his work continues to be studied and admired by scholars and naturalists alike.
trouble with the plates, they are too inaccurate to be of use at present. But the letterpress is a perennial source of observation on the habits and structure of birds. In 1688 Ray edited a second work on the same plan, embracing the fishes. This was published at London, in folio, with the title 'Historie Fiscum Libri Quatuor.' The descriptions in this work are good, and Cuvier states that it contained many observations on the Mediterranean fishes that could not be found elsewhere. In all his descriptions Willughby was very careful in distinguishing specific characters, and in this way he corrected many of the errors of preceding writers.

When Ray were early Fellows of the Royal Society of London, and Willughby contributed some papers to the 'Philosophical Transactions' before his death. Two of these were published in the 'Transactions' for 1671; one of them was on a 'New Wasp on Ophicia Chrysomene,' and another on 'The Habitations of Kinds of Bee lodged in old willows.' Ray afterwards contributed many papers on insects, of which the substance had been prepared from Willughby's manuscripts.

He had been an active member of the 'Ornithologia,' has left behind him a beautiful memorial of the estimation in which he held his friend in the summary he there gives of his character. He seems to have added to habits of excessive industry and a rare philosophical genius, every virtue. It is not easy to say he was useful to his family and friends, in his life. The influence of Willughby undoubtedly, under the direction of Ray, has been very great in every department of zoology, and had he lived to have laboured more, and to have developed the great principles of classification, of which Ray did much to clear up, it might have been said that the foundation of both sciences was laid at the same period in Great Britain. (Ray.)

(Derham's Life of Ray; Ray's Preface to Willughby's Ornithologia.)

WILMOT, JOHN, EARL OF ROCHESTER, was born at Ditchley (Oxfordshire), 10th of April, 1647, or, according to Burnet and Wood, in 1648. He was the son of Henry, Earl of Rochester, a brave royalist in the civil wars and Protector of Charles II. in his exile. He was educated in the free-school at Burford, and at Wadham College, Oxford, where he showed remarkable talents. At school he acquired an exact knowledge of Latin, and became familiar with the best authors of the Augustan age, in whose writings he ever afterwards delighted. At college he was placed under the charge of Dr. Blandford, afterwards bishop of Oxford and of Worcester, but he abandoned himself to pleasure rather than to study, and, breaking off his course of reading at an early age, set off upon his travels, especially to Germany and Italy. He returned to England in the eighteenth year of his age, and presented himself at the gay court of Charles II., where the graces of his person and the liveliness of his wit and fancy made him an acceptable companion. He also sought opportunities of distinction in that circle, and was elected a fellow of the earl of Sandwich, in the Revenge, commanded by Sir T. Tiddiman, and displayed great courage in the attack made on the Dutch fleet in the port of Bergen. In the following summer he again went to sea, under Sir Edward Spragge, and in the midst of an engagement voluntarily carried away a despatch in an open boat, a service of great peril, which he executed with daring and judgment. These warlike deeds gave him a reputation for courage, which however, he did not sustain at close quarters, and was occasionally sneaking away in street quarters, and of evading duty, which he had provoked. This impudence suggested the lines of Sir C. Scrope:—

"Thou canst bark so man's fame with thy all word; Thy prate is half as harmless as thy word."

He is said to have entered upon a court life free from habits of intemperance, but his convivial disposition, his extreme youth, and the contagious example of a profligate court seduced him into such excesses that, as he assured Dr. Burnet, for five years together he was continually drunk. His fancy was more luxuriant when inflamed by wine, and his companions encouraged his excesses the better to enjoy his wit. In the midst of drunkenness and debauchery, his talents, by extraordinary business, he uncommonly found time for poetry. Its character naturally took the cast of his life and habits: personal satires and drinking and amatory songs, were the least ignoble fruits of his genius; licentious and obscene verse, the more reflection of his life, was his ordinary recreation; and his levelling wit, and with the grace and spirit of his verbosity, only caused us to regret the misapplication of his abilities.

The services of his father and his own favour at court obtained for him the office of gentleman of the bed-chamber and comptroller of Woodcock Park. But although his convivial talents rendered him agreeable to the king, his satires often gave offence. On one occasion, while drunk, he put into the king's hand a paper which he supposed a libel he had written, in which happened to be a satire upon King Charles himself. At another time he ventured so far as to scribble upon the door of the king's bedroom the well-known epigraph:—

Here lies our sovereign lord the king.
Whoever sitteth on his throne
Shall be for evermore his enemy.
of the honey are attributed to the great forests of im- 
etrees, of the flowers which the bees are very fond.

Though a great deal of honey is used for mead, or tipep, 
and for malinek, a beverage composed of honey and rasp-
berry juice, large quantities are exported. The fishing is 
of little importance. The abundance of fresh-water fish 
in the rivers and lakes, such as perch, pike, carp, but 
there is none for exportation. Sea-fish are obtained from 
Courland and Livonia.

There are vast forests of oak, fir, ash, beech, lime, will-
ower, and maple, and among them we find toadstools 
treating received finally its antient name of Wilna. It 
is bounded on the north by Courland, on the north-
west by Vitepok, on the east by Minak, on the south by 
Grodno, on the south-west by the kingdom of Poland, 
and on the west by Prussia, and on the north-east by 
the Baltic. Its area is 24,403 square miles, and the popula-
tion 1,315,800 inhabitants.

Flax.—The economy of Lithuania is essentially agri-
cultural, and the yielding of flax is of great pro-
ingress. The raw flax is consumed in our own manufac-
tories, but little attention is paid to the flax-growing 
elements, and a great deal of it is exported to Russia, 
where it is used for the manufacture of paper.

Agriculture.—Of all the occupations which support the 
inhabitants of Lithuania, agriculture is the most impor-
tant. It is the chief productive industry, and it is 
controlled by the government. The Lithuanians are 
remarkable for their hardy nature, and they work 
diligently to produce the greatest possible yield from 
their land. They cultivate various crops, including 
wheat, rye, barley, oats, potatoes, and hemp.

The climate of Lithuania is moderate, with long, 
cool summers and mild winters. The soil is fertile, 
and the Lithuanians are skilled farmers. They 
produce a large amount of grain, including 
barley, wheat, and rye. potatoes are also 
common, and they are used in the local cuisine.

There are many lakes and rivers in Lithuania, 
which provide a source of water for irrigation and 
irrigation. The Lithuanians are skilled at 
irrigation, and they use it to maximize their yields.

Fish farming is also important in Lithuania, 
with many lakes and rivers providing a source of 
fish. The Lithuanians are skilled at fishing, 
and they use it as a source of food.

Manufactures and Trade.—Lithuania has a 
long history of manufacturing, particularly in 
textiles and metals. The Lithuanians are 
skilled in weaving, and they produce a variety of 
textiles, including cloth, linen, and 
textiles. The Lithuanians are also skilled at 
metalworking, and they produce a variety of 
metal goods, including 
and 
iron work.

Trade is important in Lithuania, 
with many goods being imported and exported. The 
Lithuanians trade with neighboring countries, 
particularly Russia, Poland, and 
Prussia. The Lithuanians are 
skilled at trading, and they use it to 
support their economy.

The population of Lithuania is 
diverse, with many different 
ethnic groups. The Lithuanians are the 
most numerous, followed by 
Russians, Poles, and Germans. The 
Lithuanians are skilled at 
agriculture, and they use it to 
support their economy.

The government of Lithuania is 
strongly supported by the 
people, and it is 
skilled at 
administering the country. The 
government is 
organized, and it is 
skilled at 
running the country.
the great Krusenstern, appointment He a quam Musical 412, obscure CommenuUio has 'was garden since teachers in 1832, burnt by

Trok, the second capital, is situated on a lake 17 miles to the west; it has 4000 inhabitants. Kowel is a considerable town, situated at the conflux of the Wilia and the Niemen, and surrounded on all sides by those rivers: it was here that the main body of Napoleon's army entered Russia on the 24th, 25th, and 26th of June, 1812. It is one of the most ancient towns of Lithuania. There are several churches, and some houses built in the Gothic style. Kreidany, with 6000 inhabitants, is a very respectable town; all the houses however are of wood.

WILNA, the ancient capital of Lithuania, now that of the government, is situated in 54° 43' N. lat. and 23° 10' E. long., at the conflux of the navigable river Wilia and the Wilieka, and is surrounded with picturesque hills. The streets, which are crooked and narrow, bear witness to its antiquity. On an eminence called the Castle Hill are ruins of an immense palace of the Jagellons. The town-hall does great credit to the talents of the Polish architect Guczewicz; the ascent, the palace of the government, and some palaces of the nobility are handsome buildings. Among the churches the cathedral, dedicated to St. Stanislaus, is the most worthy of notice. It was built in 1367, on the spot where the sacred fire had formerly been lighted in dedication of the Lithuania god Perkūnas, the master of the thunder. Besides the Roman Catholic churches, there are several Jewish synagogues, two Protestant churches, two Greek churches, and a mosque. There are in all forty churches.

The town of Wilna, founded as a college of Jesuits in 1578, and raised to the rank of a university, was not however permitted to teach medicine or jurisprudence. In 1773, when the order of the Jesuits was suppressed in Poland, its property was assigned to the schools, and the univeristy was empowered to impart all the branches of human knowledge. Political events caused it to decline till 1803, when the emperor Alexander gave it new statutes and an increased revenue; it was in a very flourishing condition when, in consequence of the revolution of 1812, it was suppressed in May, 1812, and its library of 200,000 volumes was transferred to St. Petersburg. There remain only a medico-chirurgical academy, with the botanic garden, the observatory, and a theological seminary. There are no manufactures of importance but a considerable trade. The population is 68,000 inhabitants, of whom nearly one half are said to be Jews.

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Schultzier, La Russe, la Pologne, et la Finlande; Hansel, Das Reisen der Reiche; Brockhaus, Conversations Lexicon; Kruenstener, L'Instruction Publique en Russie.

WILSON, FLORENCE, is the name generally given to an author who is spoken of by his contemporaries only by his designation, Florence Voluzenus. The vernacular name Wilson has been attributed to him solely because, being a Scotchman, no other common to Scotland approaches so near to that which he assumed. He has been supposed that he was called Wilson, because he was patronised by the great cardinal and in a vernacular letter which has been preserved he signs himself Voluzenus. He is supposed to have been born near Elgin, in the county of Moray, about the beginning of the sixteenth century, and to have studied at the university of the College of Aberdeen. He afterwards studied at the university of Paris, where he became tutor to a son of Cardinal Wolsey's brother. Losing this employment at the death of the cardinal in 1530, he was patronised by the cardinal of Lorraine, a suburb of Paris. In 1534 the bishop went on an embassy to Rome, but Wilson, who was to accompany him, was kept by sickness at Avignon. Understanding that Cardinal Sadolet desired a Latin scholar to teach a grammar-school at Carpentras, the metropolis of his diocese, he paid his services in that capacity. Sadolet has left an interesting account of his interview with the wandering student, and of his surprise in finding one so well versed in polite learning coming from so distant and obscure a country as Scotland. Wilson received the annual salary of seventy crowns, and entered on his duties in the year 1535. His earliest work, the publication of which is only known from its being entered in the "Bibliotheca Thesauri," and mentioned by Gesner, was published at Lyon in 1535. It is called "Commentatio quaedam Theologica, aut crudelitatum praecipuorum." In 1543 he published the work by which he is best known, "De Animis Tranquillitate Dialogus." The scene is laid in a garden near Lyon, and three interlocutors greatly debate on the subject of tranquillity of mind, in the manner of the dialogues of Cicero. It was republished at Lyon in 1537. A third edition was printed at Edinburgh in 1707, under the superintendence of Reidman, and a fourth at Edinburgh in 1751, edited by Principal Wilson.

In 1546 Wilson formed the design of returning to Scotland; it was opposed by the dean of the cathedral of Wilna, where he died, "quae procul a patria," as Buchanan laments in some laudatory lines addressed to his memory. Dempster mentions among Wilson's works, "Philosophia Arithmetica," on which he supposes him to be insufficient authority for such a work and another existed.

(Mackenzie, Lives of the Writers of the Scot. Nation, iii. 29-34; Irving, Lives of Scottish Writers, i. 23-34; Chambers, Biographical Dictionary of Eminent Scotsmen.

WILSON, JOHN, Doctor in Music, was born at Faresham in Kent, in the year 1594. He was first a student of the Chapel-Royal to Charles I., and afterwards Seruit in Ordinary to the same king. He was esteemed the best organist in England, and was a most zealous attendant on the king," Sir John Hawkins says, "he frequently played to him, when the king would usually Lean on his shoulder." He was created doctor in music at Oxford in 1644, and in 1650 was elected professor of the same science at Cambridge. He is supposed to have had apartments in Bachelat College, where, assisted by the royalists, he excited "such a love of music as is still measure accounts for that flourishing state in which it long subsisted there; and of which Anthony Wood speaks in his "Lives of Eminent Painters," after the Restoration he entered into the service of Charles II., succeeding the famous John Lawes, and died in 1673. He composed much sacred music, and set many of the psalms of Horace, as well as select passages from the works of Claude and Petronius; and, in a few of his works now are to be met with, and of these the most pleasing are published in Playford's "Musical Companion," 1663, and interesting and excellent collection of vocal music, which is becoming rare.

WILSON, RICHARD, R.A. This great landscape-painter was born of a respectable family at Fingen in Montgomeryshire, in 1713. He was the third son of seven children, six sons and one daughter. His father was a Mancunian clergyman of the name Wilson; it was in 1751 that he painted a large picture of the princes of Wales and his brother the duke of York, for their tutor Dr. Hayter, bishop of Norwich.

After practicing some time with success as a portrait-painter in London, he went, in 1748, to Italy to study the great masters. He afterwards resided in France, but was shortly afterwards called to the livings of Mold in Flintshire. Young Wilson showed very early a taste for drawing; and gave much promise, that his relation Sir George Wyne took him to London and placed him in the studio of Thomas Wright, who lived in Covent Garden. With the master he made great progress; but nothing is known of his earlier studies. He must however have attained some rank as a portrait-painter, for in the year 1769 he painted a large picture of the princes of Wales and his brother the duke of York, for their tutor Dr. Hayter, bishop of Norwich.

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his portrait for a landscape. Wilson did not do as many painters have done, that is, copy the works of celebrated masters, but he went immediately to the source of all art, and confined his studies to nature. By this course he attained that bold natural yet classical style for which he is distinguished, avoided the acquisition of adventitious beauties, and became a member which generally arises from the too partial study of favourite masters.

He returned to London in 1750, after an absence of six years. In 1760 he exhibited, in the great room at Spring Gardens, his celebrated picture of Niobe, which was purchased by Wilson's brother. This work established his reputation in England as one of the first landscape-painters of his time. In 1765 he exhibited in the same place a View of Rome from the Villa Madams, which was the subject of the then Marquis of Bœck. He was one of the first members of the Royal Academy, which was founded in 1788; and at the death of Hayman, in 1770, he was appointed librarian in his place: this appointment brings a very small emolument with it, yet, small as it is, Wilson solicits the place; for although a few discriminating connoisseurs purchased some of his best pictures, he was neglected by the public, and was in a state of indigence compared with the majority of his fellow-members of the Academy. Many of the academicians were glad to lead up to the dealer, who, opening a door, pointed to a pile of landscapes against the wall, and said, "Look ye, Dick, you know I wish to oblige you; but see, there's all the stock I've paid for these three years." And it is a fact that some of these landscapes, for which Wilson had been since sold for nearly as many hundreds, thus verifying the prophetic consolations of Peter Pindar to the poor painter, in his "Odes to the Academicians": —

"Wilson's art
With hold the empire o'er my heart,
By Britain left in poverty to bear —
But, honest Wilson's humble head,
Emolument thou shalt find.
And for a house how canst thou taste to rear —
Those start at thy prophetic lines!
They are but indifferent for those times;
Wait till then has been a hundred year!"

The following instance will show how unnaturally Wilson was appreciated even by those who might be expected to know better: — He painted a picture of the Royal Gardens of Earls, which being shown to the Grand, expressly for George III., and after the king had kept it for a short time it was returned to him; the king however had probably little to do with the transaction. Peter Pindar (Dr. Wolcott) bought the rejected picture.

This fortunate chance enabled him to sell his works, that when one met with a ready sale and more than usual attention, he repeated it; and he painted some subjects as many as four and even five times, making only very slight alterations: he painted five pictures of Mackenas's Vase, with the following principal works: — Niobe; Phaeton; large view of Rome; Villa of Macenas at Tivoli; large view on the river Po in Italy; a companion to it, called Nolitude; View on the coast of Baise; View on the Strada Nomentana; Hadrian's Villa; several views near Rome, Temple of Bacchus near Rome; View on the Tiber; View of the Bridge of Kinc; the Lake of Nemi; Ciceria at his Villa; View of Anconae; Broken Bridge of Narni.; Ruins on the coast of Baise; Temple of Venus at Baise; Island in the Gulf of Venice; Tomb of the Horatius and Cursati; Apollo and the Seasons; and numerous others which generally arise from the too partial study of favourite masters.
W I L

Hence his fire-side was a solace to the misanthropic painter, than whom no mortal of his transcendent talent had ever gathered so much of a claim. Perhaps it is injurious to his memory to write him down misanthropic; certainly he became a cynic—and who but must lament the cause? Wilson was one of those rare geniuses who appear formed to develop the almost hidden excellence of every season of art and continued unabated when his superiors in rank; for he unfortunately lived when his lofty conceptions of art surpassed the comprehension of his contemporaries, which inducing indifference and neglect of his extraordinary talent, naturally begot an asperity in his proud manner. He was a clever man, whether a professor of a liberal science or skilful mechanic; and neglected talent could always draw largely upon his sympathies. Thomson was a man exactly suited to his taste; he was humorous, good-tempered, and speculative in his own profession; and being, as is said before, not much hurried, Wilson, when under the influence of the spleen, would quit his easel, and march off to Exeter Change, when, under cover of Thomson's stall, he would sit and meditate in the evil dispensations of the Fates to men of mind. Wilson frequently took to his way, and so the pipe with Thomson; and sometimes Garrick was one of the party.

(T. Wright, Some Account of the Life of Richard Wilson, R.A.)

WISLONIA, a genus of plants belonging to the natural order Convolvulaceae. This plant was discovered by Brown in New Holland, and named by him in honour of John Wilson of Kendal, who published 'A Synopsis of Botany.' Ray's Method in 1743. In this work many new stations of plants were indicated, and notes added upon the economical and medicinal uses of medical plants. Wilson was in an humble condition of life, and made great sacrifices for the purpose of enabling him to pursue his botanical studies. He was so anxious to possess Morris's work on plants, that he was about to sell his only cwt to purchase it, when a beneficent lady in his neighbourhood presented him with a copy.

WILTON, JOSEPH, R.A., a successful sculptor in his day, and the fashionable precursor of Nollekens in English bust-making. He was born in London in 1722; his father was a wealthy plasterer, and when his son was of a sufficient age, he sent him abroad to study sculpture. Wilton studied at Florence, and returned to England. He came in contact with Cipriani, the architect, and a clever modeller of the name of Capizziolo, who assisted him in some of his works. When the Duke of Richmond opened a gallery for students in art, in Spring Gardens, he appointed Cipriani and Wilton the directors of it. When he died in 1792, Cipriani was appointed Tutor, and he modelled the coronation coach of George III. Of his public works the principal are—the monument to General Wolfe in Westminster Abbey, of Admiral Holmes, of the Earl and Countess of Monbran, and of Stephen Hales. He made busts of Bacon, Cromwell, Newton, Swift, Wolfe, Chatham, and Chesterfield, besides many others. All his works were, like those of Roubili, admirably worked in the marble, but he showed little taste in his compositions; they were too crowded and too minute in accessories, and every species of ornament was forced upon him, and he adapted design for sculpture. Wilson however made a large fortune and lived in great style. He kept almost an open board, and among others, Wilson, the landscape painter, and Bentley, the lexicographer, were often seen making their way to Wilton's at dinner-time. He had a very beautiful daughter, who was married to Sir Robert Chambers.

In the Royal Academy there is a bust of Wilton by Roubilli, the present of his daughter Lady Chambers. Wilton was one of the founders of the Royal Academy. He died in 1803, in his 81st year.

(Cunningham, Lives of British Painters, Sculptors, and Architects.)

WILTSHIRE, an inland county of England, bounded on the north-west and north by Lancashire, on the south-east by Hampshire, on the south-west by Dorsetshire, and on the west by Somersetshire. The county is of very compact form, approximating to a quadrangle, having its angles respectively near Lechlade, Yatton near Malmesbury, Southwell, and Dodman near the verge of the New Forest. There are several small detached portions, surrounded by the adjacent counties of Gloucester and Berks. These detached portions consist of part of Wrotham, and part of the estate of Hakon, situated in Hurst parish, Dibnam lying in Shifnal in Shropshire, and Swallowfield in Berkshire, and parts insularated in Berkshire; Kingwood parish, near Wootten-under-Edge, insularated in Gloucestershire; and Poulton parish, between Cirencester and Fairfield, also insularated in Gloucestershire. The county, including all its detached portions, is situated betwixt 50° 55' and 51° 43' n. lat., and between 1° 32' 20" W. long., and 1° 49' 30" W. long. The greatest dimension of the county, measured north and south, is from the border of Gloucestershire, between Cirencester and Fairfield it is 40 miles; and the width, between the north-north-west and the south-south-east, from the nearest point of the border of Hampshire at Downton Bridge, between Southam and Ringwood. The greatest breadth from east to west is from the junction of the three counties of Hampshire, Berkshire, and Wiltshire, at Inkpen Beacon, to the nearest point of the county of Gloucestershire, 63 miles. These dimensions are of course the main part of the county, without the detached portions. The area, including the detached portions, is estimated at 1,887 square miles; the aggregate areas of the several parishes are estimated at 4,195 square miles; the trilling discrepancy in these estimates is not accounted for. The population of the county at the several enumerations of the present century was as follows:—1801, 185,107; 1811, 193,828; increase 5 per cent. 1821, 181,307; increase 15 per cent. to 1831, 184,800; increase 82 per cent. In respect of area it is the fourteenth of the English counties, being 99 square miles smaller than Sussex, the county next above it, and 24 square miles larger than Shropshire.

Surface and Geology.—The geological formations of Wiltshire consist chiefly of the cretaceous and coal series, with the intermediate beds; in the south-eastern corner the chalk is covered with the tertiary formations of the chalk-basin of the Isle of Wight. We shall first notice the chalk formation, which may be considered as comprising a considerable portion of the country, striking geological feature of the county, forming the extensive down lands which overtop the eastern, central, and southern parts. The chalk district of Hampshire and Wiltshire constitutes the centre of the chalk formation in England, from which exceed four great branches. The first branch is the chalk range of the Chiltern hills, Dumbale and Rounton downs, &c., extending through Berkshire, Buckinghamshire, Bedfordshire, Hertfordshire, Cambridgeshire, Essex, Hants, and Wiltshire, across the Wash, reappearing in Lincolnshire and Yorkshire, and terminating in Scarborough Head; the second branch is the North Downs of Hampshire, Surrey, and Kent; the third the South Downs of Hampshire, Sussex, and Kent; the fourth the North Downs of Dorsetshire, passing through the counties of Dorset, enclosing between them the trough of Poole. The Wiltshire portion of the great central chalk district is divided into two parts by the vale of Pewsey, where the
green-sand occupies the bottom of the valley, and is skirted on each side by the chalk-hills. As this valley extends eastward as well, it will be convenient to describe portions first, within the chalk district as the northern and southern districts; Marlborough downs belong to the northern district; Salisbury Plain belongs to the southern district.

The chalk district is bounded by a line entering the county from Berkshire at the village of Bishopstone, and passes south-west by the villages of Little Hinton, Wanborough, Liddington, Badbury and Chiseldon, and then along the hills above Broad Hinton and the Winterbourne, Avaury. From Avebury, running south-west to Cherhill, then south-west to the neighbourhood of Edington or Heddon, its westernmost point, from which the boundary returns in a tolerably direct line eastward by Bishopstone, All-Cannings, Stanton Fitzwarren, the All-Cannings, and then by a northerly circuit of Tottenham Park near Great Bedwin, to the border of Berkshire at Great Shalbourne. The boundary may be traced throughout by a tolerably steep escarpment over-looking the surrounding county. The included chalk district is divided into the parts on the west, running east and west, through which the Kennet passes from Avebury to Hungerford; and the northernmost of the two parts is again divided by a valley running north and south, and divided by a small feeder of the Kennet. The easternmost part is a continuation on the north side of the Kennet to the south of Marlborough.

The southern part of the chalk district forms an elevated platform, and is considered as a type of the Vale of Pewsey. The northern part of the chalk is the site of a number of small hilly outcrops, known as the Downs or the Westwood, which are partly occupied by the Great Bedwin. The boundary of the chalk district is marked by a steep escarpment over the vale of Pewsey. The northern part of the chalk district forms an elevated platform, and is considered as a type of the Vale of Pewsey. The southern part of the chalk district forms an elevated platform, and is considered as a type of the Vale of Pewsey. The northern part of the chalk is the site of a number of small hilly outcrops, known as the Downs or the Westwood, which are partly occupied by the Great Bedwin. The boundary of the chalk district is marked by a steep escarpment over the vale of Pewsey. The northern part of the chalk district forms an elevated platform, and is considered as a type of the Vale of Pewsey. The southern part of the chalk district forms an elevated platform, and is considered as a type of the Vale of Pewsey. The northern part of the chalk is the site of a number of small hilly outcrops, known as the Downs or the Westwood, which are partly occupied by the Great Bedwin. The boundary of the chalk district is marked by a steep escarpment over the vale of Pewsey.
Hill. A considerable part of this ridge and of the valley between it and the chalk hills is uncloisoned, if not uncultivated, and is very thinly peopled.

From Eddington the outer edge of the green-sand may be traced in an irregular line, marked by a clearly-defined escarpment, by Devizes and Potton to Market Lavington; then westward, but not with so clearly marked an escarpment, by Westbury to the border of Somersetshire, between Westbury and Shaftesbury. It forms the west side of the chalk between Warminster and Mere, the subjacent formations appearing only in one or two places to a very small extent. Between Mere and Wilton, and between this district and the Dorsetshire Stourhead, the green-sand is seen cropping out beneath the chalk, and occupies a very narrow strip of country, skirting the chalk district. About Warminster and Stourhead Park, in the south-western part of the county, the green-sand hills nearly equal those of the oolitic at the same period, near Aslockton, where it is on a green-sand hill 800 feet high. Ticklepath Hill, near Shaftesbury, is formed of green-sand.

From beneath the outer edge of the green-sand formation the Weald clay, or Tetsworth clay, which usually separates the green-sand from the iron-crops out. It occupies, only a narrow tract, surrounding on every side the country occupied by the superior formations, and may be traced through the county without interruption, except perhaps once, on the south side of the vale of Wardour, at the old iron-works near Bath, and at some other places, where the green-sand is covered by the green-sand. The outer edge of this clay formation runs by Swindon, Calne, Sandy Lane, Send (between Devizes and Westbury), and Dillon, into Somersetshire. In the vale of Wardour the clay occupies a very narrow strip, skirting the green-sand.

The iron-sand does not appear in this county, except in a few places, especially near the foot of Beacon-down Hill (chalk), between Calne and Devizes, rising toward Bowden Park, and at the Dorsetshire Stourhead, and is described as being a pudding-stone composed of rounded quartz united by a siliceous cement with a red calc of iron, containing ore formerly in much request for the furnace and the forge.

The absence of the iron-sand, the Weald clay is found to rest along its northern and north-western borders on the Kimmeridge clay, which belongs to the uppermost division of the oolitic group. This Kimmeridge clay occupies a tract rarely exceeding two miles in breadth, but extending in length from the Berkshire border to Swindon, beyond which it is covered by the westward extension of the overlying formations. At Swindon, in the Kimmeridge clay district, beds of oolitic freestone, similar to the Portland beds, intervene between the Weald clay and the Kimmeridge clay, and are described as being very clayey. In the vale of Wardour beds similar to the Purbeck beds (the uppermost in this upper division of the oolites) are found, and slabs are raised for roofing. Beneath the Purbeck beds the oolitic limestone crops out, and in the vale of Wardour, on the banks of Dunmore, the oolite crops out, and the chalk of the Chichester Hill. From beneath these formations a clay, which is probably identical with the Kimmeridge clay, crops out, and occupies the western part of the vale of Wardour, extending beyond the boundary of Wiltshire into Somersetshire. Much disturbed has been experienced by the denuded subcetaceous strata in the vale of Wardour. At Chicksgrove, on the banks of the Nadder, eight miles west of Wilton, they are horizontal; but at Chilmark, Fonthill, and Tisbury they are inclined 40°; and in the upper part of the county the upper oolites are confined to low ground; in the vale of Pewsey they acquire some elevation, as in Lady Down near Tisbury.

The formations already noticed occupy the whole of the county and extending westward to a line drawn south west from the Berkshire border, 3 miles south of Highworth, parallel to and a little to the north of the Wils and Berks Canal, by Stratton to the neighbourhood of Wootton-Bassett; and from thence south-west by west, across the canal by Calne and Bromham to Send; and from thence south-west to the Somersetshire border at Corley near Frome, the whole line making a circuit convex to the north-west. Beyond this boundary the strata of the middle oolites, comprehend the coral-rag and calcareous grit, and the Oxford clay, crops out, occupying all the northern border of the county and extending westward to a line drawn south west from Cirencester in Gloucestershire, by Kemble, Hankerton, Melmsbury, Stanton-St.-Quentin, Chippenham, Melksham, Semington, Trowbridge, and North Bradley, to Frome in Somersetshire; beyond which line the upper beds of the lowermost division of the oolites are observed.

The tract occupied by the middle oolites has a breadth of 8 miles along the northern part of the county, where it extends into Gloucestershire: between Wootton-Bassett and Cirencester it is 11 or 12 miles broad; and then diminishes south-westwards to the county line between Wilts and Somer- set, and Frome and it is probably not more than one or two miles broad. The lower or outer edge of the coral-rag and calcareous grit may be traced by a range of low hills and dales, in which this formation is observed, between Stroud and Frome, and to the eastward of Frome, near the civil parish of Wiltshire which is covered by the westward extension of the chalk and green-sand. The average height of the coral-rag hills seems to be about 400 feet above the level of the sea.

The Oxford or clunch clay occupies the lower green-sand beds, and is the border which subdivides the upper beds of the oolitic strata between the Kimmeridge and the green-sand. The limestone (Kelloway rock) which is occasionally found in connection with the Oxford clay, and which is used only for mending the road, has been observed in some parts of the county, such as the district between Cricklade and Melksham, and again about Melksham, Semington, and Trowbridge. Mineral-waters occur in this formation:

The formations belonging to the lower oolites in this county are the corn-brash, the forest marble, and clay; the clay occupies the entire area of the county, unless it is covered by other rocks, and is found in the northern counties, and in places near Calne, Devizes, and Stourbridge, and also at Melksham, where it is a thick clay, and is intersected by the river by the Cotswold range, appears to be chiefly composed of the great oolite; and their western slope is part occupied by the beds of corn-brash and forest marble.

Hydrography and Communications—This county is comprehended in the valley basin of the Thames, the Severn, and the Chichurch or Salisbury Avon; that part of the south-western border about Stourhead and Mere which is drained by the Dorsetshire Stour being included in the basin of the Avon, with which the Stour joins the Thames. The southernmost part of the county, which is included in the basin of the Thames, is so extensive that a line from the banks of the Severn to the banks of the Thames is about 20 miles. The county is included in the Avon above Melmsbury; but through the county near Tisbury, which is covered by the Cotswold range, appears to be chiefly composed of the great oolite; and their western slope is part occupied by the beds of corn-brash and forest marble.

Some of the streams which join the Thames in the upper part of its course rise in this county. One, which has been observed by some persons, but with very little reason, as the true Thames, rises just on the border of the county near Combe, and deriving its waters from the Cotswold range, crosses the Thames and Severn Canal by a Thames-head bridge, and flows south-east near Kemble, Somerton-Keynes, and Ashton-Keynes, a mile above which it is joined by the flagman brook from Oxford, and below which it is joined by the upper Lechlade, from which the river down below by the junction of the Swillbrook, it joins the Churn or true Thames (Taunton) from Cirencester, about a mile above Cricklade bridge.

The clay has a course of about nine miles before joining the true Thames (from Cricklade bridge), where the true Thames first touches the county, it flows four miles by Castle Eaton to the border of the county; then between three and four miles farther along the coast separating Wiltshire from Gloucestershire; and it joins the Severn near Lechlade. Between Cricklade and the border of the county it receives the key or Ray, and just above Lechlade the Cole, both which..
ise in the green-sand hills or in the northern escarpment of the northern chalk district, and joins the Thames on its north bank. The river (otherwise the River) rises in the green-sand hills near Wroughton, close to which village, within 2 miles of its source, it turns two miles; it runs northward, passing to the west of Swindon and close to the village of Water Eaton, its course, and by the course of about 10 miles; it receives several brooks by the way.

The Cole has three principal sources: one between Swindon and Chisledon, in the green-sand; one near Chisleh,

which also in the chalk-escarpment, and one in the chalk-escarpment. It flows northward, chiefly on the north side of Berkshire. It flows northward, chiefly on the north side of Berkshire. Its course through Berkshire is about 20 miles long; its course through Berkshire to its junction with the Thames at Reading is from 20 to 25 miles; making its whole length from 30 to 40 miles. Some small tributaries join the Kennet in Berkshire, 8 miles long. A tributary joins the Kennet on the chalk by Ogbourn-St.-Andrew and Ogbourn-St.-George, into the Kennet on the left bank below Marlborough; another, from Aldbourne, flows south-east and joins also on the left bank near Hambury, 3rd, rising in the chalk by Hambury, 3rd. A branch of Little Bedwin, joins the Kennet on the right bank near Hungerford; this last is partly incorporated with the Kennet and Avon Canal.

The Ton, sometimes called the Upper Avon, rises in the southern slope of the northern chalk district, in the neighbourhood of Devizes, and flows east-south-east along the vale of Pewsey by Beckington to Marden, Wivelisford, Charlton, and Rushall, near which village it divides into two branches. One branch flows first west-south-west, then south, along the vale of Pewsey, by Easton, Milton, Pewsey, Manningford-Abbots, Manningford-Bruce, and Newington. From the junction of the united stream flows southward by Upavon, Chisledon, Edington, and Drayton St. Martin into the Kennet. Milton, Bulford, Amesbury, Wilsford, Great Durnford, Woodford, and Stratford-under-the-Castle (i.e. the castle of Old Sarum) to Salisbury, at which it is joined on the right by the Wily (united with the Nadder): it is joined a little lower down on the left bank, by the Bourne, and still lower, on the right, by a stream which rises near Alvediston, and flows eastward through Ebbesborne-Wake, Fifield, Broadbalk, Stoke-Farthing, Plaistow, Bishopston, Toney-Stratford, to Stratfield-Lange-Bass, Hungerford, Oldbury, and Nunton. Below the junction of these streams the Avon flows southward by Standish house to Downton, a little below which it quits the county: its length from the neighbourhood of Devizes to the border to the county is 41 miles: its height above the sea is 215 feet. But that part of Christchurch is about 23 miles; making 66 miles in all.

The Wily or Willey rises in the downs north of Mere, in the south-west part of the county, and flows first east, then north by Kingston-Deverill, Monkton-Deverill, Brixton-Dev, and Badminton, for a short distance through Badminton, near which it bends to the east-south-east, then north, and past Bishoporton, Norton-Bavant, Heytesbury, Knook, Upton-Love, Boyton, Sherrington, Codford-St.-Peter, Codford-St.-Mary, Stourton, and Little Langford, to Stapleford. Here he joins on the left by a stream, 6 miles long, which rises near Odstock-St.-Mary and Orestock-St.-George, and passes Sherston, Maddington, Rolleston, Winterborne-Roke, and Berwick-St. James. From the junction of this stream the Wily flows south-east by Wilsford, South New- ton-Dorchester, Piggotters, then Millston, Manton, Bemerton, and West-Harnham, to Fisherton-Anger, a suburb of Salisbury, where it joins the Avon. Its whole course is about 27 miles. Near Quiddington it is joined on the right by the Nadder, which rises close to the Dorsetshire border near Devizes, and flows first east, then north-east by Donhead-St.-Andrew, and Donhead-St. Mary, to Tisbury; where it bends eastward and flows near Sutton-Mandeville, Fovant, Compton-Chamberlain, Bar- ford-St.-Martin, North-Burcombe, and Wilton, into the Wey: its whole length is by calculation 18 miles.

The Bourn flows just within the northern boundary of the southern chalk district, and flows southward by Colling- bourn-Kingston; Collingbourne-Duics, North Ridworth, South Ridworth, Shipston (these two villages are in a corner of Hampshire with the Bourn here crossed), Chold- erton, Newton-Toney, Allington, East-Boscombe, Idmiston, Ports, Winterbourn-Gunner, Winterbourn-Dansey, Win- terbourn-Ears, Winterbourn-Ford, and Laverstock, near Salisbury, below which it joins the Avon: its whole length is about 23 miles.

A very small part of the county about Mere, in the south-west corner, is drained by the upper waters of the Dorsetshire Stour, which rises at Stourhead in this county. The Avon and the Salisbury and the whole of their outfall into the English Channel at Christchurch.

That part of the county which belongs to the basin of the Severn is drained by the Bristol Avon, the source of which is in the Cotswold Hills, at Horton near Chippen-Sodbury and Dursley. The Severn is joined on the south side of Gloucestershire. The Severn, after crossing a circular course, 15 miles east, by Little Badminton, through Badminton Park, on leaving which it enters Wil- shire, by Luckington, Great Sherston, Easton-Grey, and Bretham or Cowage, to Malmesbury, where it is joined by a feeder from the river Frome. From Malmesbury the Avon flows in a winding channel 15 miles southward by Little Somerford, Great Somerford, Dansey, Selsey, Sutton-Benger, Christian-Malford, Kelmsco, and Tytherton-Lues, to Chippenham, which is only 10 miles by the road, and a distance of 20 miles in a winding channel south-west by Lay- cock, Melksham, Whaddon, Staverton, Bradford, and Limpley-Stoke, to the border of this county and Somerset- shire, between Bradford and Bath. Besides the few streams which joins it at Malmesbury, the Avon receives on the left bank a stream from Wootton-Basset, and the river Marden, a stream from near Devizes, and the rivers Wore and Frome. The stream from Wootton-Basset rises on the slope of the Avon near Bredon, and runs south-east by Bredon- Basset and Brinkworth, into the Avon at Dansey. The Marden rises in the green-sand hills (Compton Hill) above Compton-Basset, and flows by Calne, just below which it receives a stream (larger than the Marden itself), also in the green-sand hills. The stream flows north by the highway and Cliffe-Pypard, and which stream passes Hills- merton and Bemhill. The Marden is about 9 miles long; if measured from the head of the hill-marton branch it would be longer. The stream from the neighbourhood of Devizes rises east of that town, and passes near Stret- tern, Potten, and Semington: it is 13 miles long, and joins the Avon at Whaddon: it receives several feeders, two of them more immediately from the neighbourhood of Devizes. The Wore is formed by the junction of several streams which rise on the escarpment of the chalk downs about Westbury. The remotest spring is near Upton-Seadmore, between Westbury and Winterminister, and passes Dilton, Westbury-Leigh near Westbury, North Bradford, and Trobridge: the highest of the Wore rises near Winterborne, south of Westbury, chiefly to Somersetshire, but some part of its course (about Road, Tellisford, Farleigh, and Freshford, all in Somersetshire) is on the border of this county.

Of these numerous rivers only few are navigable, and that is the consequence of its central position and comparative elevation, from which it results that the principal streams have only the sources or the upper part of their courses in it. The navigation of the Kennet and the Wey begins as a matter of course: it does not commence until after those rivers have quitted the county. The Salisbury Avon was made navigable from that city to its mouth, under an act of 17 Charles II., but the works were destroyed by a flood soon after their completion, and remained in ruins until 1771. Some re-
pairs were then made, but they were inefficient; and the navigation is now given up except just at the mouth of the river; and even there the bar at Christchurch is an obstacle insurmountable except at spring-tides.

The want of river-navigation in Wiltshire is partially supplied by canals, of which three lines are connected with this county.

The northernmost line is that of the Thames and Severn Canal, which, in its course from the Thames at Lechlade in Gloucestershire, to the Stroudwater Canal at Stroud, is connected with the Severn at Castle Eaton and Cricklade. This canal was commenced under an act 23 George III. (A.D. 1783); and its formation led to the abandonment of the navigation of the Thames and Severn across the country by the border between Cricklade and Lechlade. The canal is not however so much used as was expected, partly owing to the inefficient navigation of the upper part of the Thames with which it is connected, and partly the paucity of traffic.

The second line is that of the Kennet and Avon Canal, which also connects the Thames with the Severn, by means of their respective tributaries the Kennet and the Bristol Avon. This canal is 97 miles long; it commences at the head of the navigation of the River Kennet at Marlborough in Wiltshire, and terminates in the river Avon at Bath: its rise from Newbury to the summit-level is 210 feet, effected by thirty-one locks; its fall from that level to Bath is 404 feet, effected by forty-eight locks. A considerable part of the navigation of the Kennet and the Bristol Avon is by means of canals; and its tributaries are three other - the Kennet at the northernmost, the Avon at the middle, and the Severn at the southernmost part.

The third line of canal-navigation is that of the Wilts and Berks Canal: it lies between the two lines already noticed (the Thames and Severn Canal, and the Kennet and Avon Canal), and connects the Thames near Abingdon, with the Kennet and Avon Canal at Semington, between Devizes and Bradford. Its whole length is 52 miles, with a rise of 108 feet from the Thames at Abingdon to the summit-level, and a fall of 201 feet from the summit-level to the Kennet and Avon Canal. After passing through the Vale of White Horse, in Berkshire, by Wantage (to which town there is a short branch), East Challow, West Challow, Uffington, Longcott (where there is another short branch) and Shrivenham, it enters Wiltshire, 21 miles from its commencement at Abingdon, and runs west-south-west along the valley at the foot of the green-and hills by Stratton-St.-Margaret’s, Swindon, and Wootton-Basset, through the village of Chippenham, where it turns south-west, and runs by Foxham, Tytherton-Luxona, Bremhill, Lacock, and Melksham, to Semington. The summit-level of the canal is in this county, commencing at Long Leaze near Boxton-St.-Martin. The section of the canal from Cricklade to Semington was formed as a separate canal under an act 53 George III. (A.D. 1813), and was called the North Wilts Canal; but has by a subsequent act (1 and 2 Geo IV., A.D. 1821) been connected with the Wilts and Berks Canal. It falls through the Wilts and Berks Canal at Semington, and near Wiltshire, having a fall of 50 feet, and passes through a short tunnel near Cricklade. There are two other branches of the Wilts and Berks Canal in Wiltshire: one of three and a half miles to Calne, with a rise of 21 feet; and one of nearly six miles to Marlborough, with a fall of 17 feet.

The principal coach roads are the present mail-road from London to Salisbury and Exeter, and the two former roads to Bath and Bristol. The Salisbury and Exeter road enters the county about two miles and a half beyond the hamlet of Bedwyn, and runs across Salisbury Plain by Winterlow Hat and St. Thomas’s bridge (over the Bourn) to Salisbury; and thence by Fisherton-Anger, Wilton, North Burcombe, Berford-St.-Martin, Compton-Chamberlain, Fovant, Berks, and Long Marshfield, to two miles and a half beyond which it quits the county.

The principal road is a mail-road which enters the county near Hungerford, and runs across several of the same forest to Marlborough, and thence across the former road to Bradford, Beckington, and Andover, until it reaches Cherhill, Blackland, Calne, Chipping, and Combe, to a mile and a half beyond which it quits the county. Other ex-mail-road branches from one to Devizes, Melksham, and Andover, runs past Pewsey, and turns into the Bradford road, to a point near which it unites with that through Calne and Chippenham. A third road to Bristol branches from the first of the two ex-mail-roads at Chippenham, and runs through Marshfield in Gloucestershire.

There are several roads from London to Exeter, beside the mail-road. One of these branching from the mail-road at Salisbury passes through Combe-Bissett, and enters Dorsetshire near Woodwaytes Inn. It passes through Broad-Charlton, Long Compton, and Bower, and runs from the mail-road at Andover enters the county at Fendalton, and runs across Salisbury Plain through Amesbury, Winterburn-Stoke, Deptford, Willy, Cricklade, and Men. Beyond which it enters Somersetshire. A road branching from this road to the Bristol road, between Styler Eolly, Muddington, Chiltem-Al-Saints, Chiltem-S. Mary, Newham, Heytesbury, and Maiden Bradley, beyond which it quits the county.

The road from London to Bristol via the Old Passage on the Severn is opposite the mouth of the Wye, branches from the Old road at Chippenham, and runs by Yatton-Kaye, Cadcombe, and Nettleton into Gloucestershire. Another road to the Old Passage enters the county at Colsclough in Ber. County. It passes through Highworth, the borough of Tetbury, Swindon, and Wootton-Basset, the Avon, Cricklade, Charlton, Malmsbury, Easton-Great Sherborne, and Luckington into Gloucestershire, uniting with the former road at Acton-Turville in Gloucestershire. A road branches from this road to Chippenham, and runs to Cirencester and Bradford on Avon. There are several roads from Salisbury, the county-town one runs south by west to Cranbourne, Wimbourn-Manor and Poole in Dorsetshire, branching from the road Exeter (through Bradford, Dorchester, and Honiton); one little beyond Corsham, through Wallop, and Wiltshire, and runs to Trowbridge. A road runs from Salisbury to Fordingbridge, Lyndhurst, and Christchurch in the New Forest in Hampshire: two south-east to Southampmore, one through Bradshaw, the other through Romsey: the one farther west to Winchester; one by Romsey, and one branching from the Leoudon and Exeter mail-road, through Stonehenge.
ridges: and two north-west to Bath and Bristol; one
through Chippenham, Westbury, Warminster, Westbury, and Bradford; the other running from this and Warminster, and joining
it at Bath.
The Great Western Railway has a considerable part of its
line in this county, which it crosses in a direction nearly east and west. It enters Wiltshire between the Shrivenham and Swindon stations, at
latter of which is 77 miles from the London terminus. There are stations at Swindon, Wooton-Basset, Chippenham
(95 miles), Gosham, and Box. There are two inclined planes here, one of which is attached to the Great Western Railway
branches from the Great Western at Swindon station, and aims, or is to run, to Gloucester and Cheltenham. It is
open as far as Gremister, including all the part which
belongs to this county. There are stations at Purton,
Usborne, and Gremister.

Agriculture.—In an agricultural point of view the
county of Wiltshire may be divided into two districts, the first
south-west, comprising all the Wiltshire Downs, with their intersecting valleys, and separated from the
Great Western by the chalk-hills from their entrance into the north-east part of
Berkshire to their south-west termination at Maiden
Bradley. We shall therefore consider these districts
separately.

South Wiltshire Agriculture.—South or more properly
South-East Wiltshire contains, in round numbers, about
500,000 acres of land. The Downs are an elevated table-
land intersected by valleys, which give the surface a broken
appearance. These valleys contain rivers and small
streams. The soil being generally more fertile there, and
the climate milder, cultivation was originally confined to
them; and there most of the villages are situated: the
higher and more exposed situations remain as natural pas-
tages.

The air on the Downs is keen, and healthy to robust con-
stitutions. The valleys, although more sheltered from the
sweeping winds from the Atlantic, partake of this keen
air, which is drawn along their course in currents.
The soil on the Downs varies little, being thin, and uni-
f ormly resting on the chalk. It produces excellent short
herbage, very well suited for sheep pasture; and where it
has been broken up, it is only by great skill and very care-
ful cultivation that it is made to repay the cost. It is com-
paratively free from weeds, and is admirably adapted to arable land, and chiefly on the borders of the valleys of
the cultivation but extends upwards in consequence of the
sand for corn offering temptations to the proprietors
of farmers to increase the quantity of land devoted to its
growing. The cloddy soil yields the best grass for
raising sheep on the arable land, and thus increasing its
utility. As we descend from the Downs into the valleys,
the soil generally becomes less mixed with flints and of a
peculiarity in nature, in consequence of the waters washing
up portions of the upper soil, of which the finer particles
are deposited on the sides of the hills, and form what is
called white land. The level part of the valleys nearest
the rivers consists of flints washed down lower, and mixed
up with the red gravel. The introduction of turnips and
beets, the cultivation of which is evidently owing to the stagnation of
waters in pools which have not had sufficient outlet; at
these spots are not numerous.

Some remarkable veins of sand intersect this district;
such as that of Great Western at Box, and a north and north-
that direction round the outer edge of the Downs, keeping
together closely to their foot, by way of Maiden Bradley, War-
somer, Westbury, and Lavington, towards Devizes, where
beaux are common, and the steep hillside between the river and the
 Pennen down the Pewsey vale from Burbage. Another
 vein also enters the county from Dorsetshire, being a con-
nexion of the sand-hills on which Shefford-down stands, and
washes through Donhead, Ashey, Swallowcliff, Foxley, Scor-
ton, and on to its junction with the broad down in Somersetfield.
This vein is also met with near
Fovant by another branch, or rather a ridge of sand-hills,
coming from West Knoyle by Stop-Seaton and Ridge-

These are the principal soils in this division; and although
there are some spots of a more clayey nature, they are not
extensive. See the Report to the Board of Agriculture,
by Thomas Davies.

The system of cultivation was originally such as the
nature of the more fertile soils and their connection with
the Downs suggested. The principal produce; and no more
was grown than the necessity of the inhabitants
required. The estates or manors extended in narrow strips
along the valleys, and had certain rights of common
and pasture attached to them. These were let partly
commonly subdivided, and the arable land lay in common
fields, in divisions and patches, which precluded any system
of cultivation which was not adapted by general consent.
This is the history of all common fields. Folding sheep on
the downs was the great resource; and the numerous streams
suggested artificial irrigation, by which hay was increased
for winter-feed and early grass for the lambing season.
In no part of England, as we shall see hereafter, was the
system of water-meadows introduced so early or carried to
perfection. In fact, it was one of the chief
features of the agriculture. A farm consisted of certain
buildings and homesteads, with meadows, irrigated if pos-
sible, or kept in heart by folding; with some fields to raise
corn for the family, and a run on the Downs for a certain
profit. Since the common fields have mostly been en-
closed and divided among the proprietors, more land has
been cultivated and better systems adopted; but this has
not altered the methods of farming, or the certain sanctity in the eyes of the farmers, who were more used to bring it from what they have seen their fathers
do before them. A great and gradual improvement however
has taken place, and new methods are daily intro-
duced. For a time it was common to grow winter
while the rents were improved; and it will in the end render this part of the country
far more important in an agricultural point of view than it is now.

The buildings on a farm were formerly very extensive,
and occasioned a great expense to the proprietors in con-
gen and repair. Since the introduction of the
method of stacking corn out of doors, which is so much better and
more economical than laying it up in barns, and especially
the introduction of threshing machines, the buildings are
now much contracted, and a less burden to the proprietor,
and better in a general way. Lime is still a principal object of the Wiltshire farmer; but his
attention is not confined to them, and he makes them sub-
ervant to a greater production of corn.

By the old system the sheep ran on the commons or Downs
during summer and autumn; and in winter the summer flocks
till they were ploughed up for wheat: as soon as the corn
was reaped, the flocks had the stubbles and the Downs to run
on, till winter forced the owners to give them hay, when
the farmer found his fold and hay, the common sheep
were still feeding and folding the extensive land and the
farmer had his own shepherd and folded on his own land.
When the ewes are near yeaning, the owner takes them
to the enclosed meadows, and by the time all the
lamb are dropped the water-meadows are ready to receive
them. As there is seldom sufficient food in winter for the
whole flock, a portion is necessarily sold off in autumn to
supply other counties, where they have more winter forage.

The greatest change is seen in the purchasing power of the
system; many of the wethers and barren ewes are
fatted at home, and the only portion sold off are the
lambs and tegets, which have been bred for this
purpose, without diminishing the breeding flock.

These flocks were formerly much larger than they are at present, but it has been found that the expense of
men and horses on a small farm is much greater in proportion
than on a larger. It is most advantageous to the farmer who
has the largest flock which one shepherd can manage to
have two or three flocks, and to keep as much arable land as will fully occupy one horse. Little
as can be profitably farmed: many
which is in the hands of a farmer, or the labour of a farmer who has the power of
ensuring good work at each department. The farmer
met with the employment of the arable land
as the condition of common flocks, and especially two crops and a fallow, valued by a
fourth of

grass-seeds, which could be

wax jujubae, and by a

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sent to waive the right of common pasture after hay-making. Since the enclosures the system is improved; turnips are raised in considerable quantities, their use for winter-feed having been soon found out. Clover, vetches, and other artificial grasses come into the rotation, and the only fault in the different systems is that which is yet too often met with, of two white straw crops following one another; the only palliation of this is the abundant folding of sheep on the downs, which keeps it in heart and prevents its exhaustion.

The Wiltshire ploughs are mostly without wheels or with only one wheel; the former are used on rough heavy soils, and the latter on light light and stubble lands; on these soils a plough with two wheels is generally used, as being steadier; the furrows being necessarily shallow, the swing-plough would be too easily thrown out of the ground. The heavy white lands require three horses at least to a plough, and but they can be easily ploughed with two; and, with good ploughmen, light ploughs might be used, such as the improved Berkshire and Suffolk ploughs. The carts and wagons are too heavy. A light single-horse cart is far preferable, and will do better be generally attempted when the market is good. The short light thin soams on the Downs, when cultivated, require much skill to make them productive. Formerly they were much worked and pulverized in summer, by which the texture was too much loosened, and the surface made extremely greasy. The wheat was sown well in spring; but the earth was blown away from the roots in high winds and dry weather, and abundant crops of poppies took the place of the thin and withered corn. This may be the farmers have adopted a better plan; the idea to give firmness to the folding, before sowing, and the crops are much improved.

The common practice of raftering the land, as it is called, that is, ploughing a furrow and laying the furrow-slice on the solid land, and then opening another furrow 18 inches from the first, so as to produce another similar ridge, leaving the surface in alternate open furrows and double ridges, has the effect of killing the grass and exposing half the roots to the air, the other half not being stirred. When this is done annually together and diagonally, with better, one harrowing down and ploughing prepare the land for wheat sowing; and the crops justify the practice, but it is faulty in that it soon fills the land with weeds. One good ploughing and pressing with iron cylinders after a clean layer is a far better preparation. A heavy dray or a nine-a-side plough is very commonly used as a substitute for ploughing. It stirs and cleans the land at the same time, raising the root-weeds to the surface, to be gathered and burned. In the sandy soils the seed is generally deposited by the manure-machine; but where flints abound this implement is not so applicable, and the broad-cast sowing is continued.

The most common rotation now adopted on the heavy white lands, where turnips will not grow, is that of fallow, wheat and barley, clover mown, ditto fed, wheat, beans, or oats. The second year of the clover it is broken up early in summer and well pulverized, and the sheep are folded on it at night; the wheat is generally good after it. Half the barley or wheat stubble is now generally sown with peas, beans, or vetches, and the other half with clover; the land is kept clean by weeding and hoeing the crops, and the clover is more certain from not recurring so often.

On the Norfolk common land, barley, clover, wheat, is commonly adopted, with the variation of a fallow between the clover and wheat, when the land is close folded and thus consolidated. Some good farmers have peas or vetches fed off early on half the barley land, to prevent withered and frequent re-treadings of clover; these are flints, but the sandy loam is so nearly allied to clay as to be cropped like heavy land, and the crops here are more certain and abundant. The Down land is cropped in various manners, turnips and barley or oats being the principal crops; on the deeper redd soils wheat is introduced every fourth or fifth year. Rape and rye-grass are sometimes sown together after wheat, to be fed off in spring, and the grass is continued a year or two more to recruit the land. The flocks of sheep which are kept everywhere give the principal supply of manuring by the fold; as fewer horned cattle are kept in the years. When the ewes and lambs feed in the water-meadows, the folding is found to be far more effective than at any other time. This is probably from the abundance of unripe produce by the fresh succulent grass.

Potatoes are raised in considerable quantities on the rich sands, which are peculiarly adapted to this crop; and it has been a common observation, that a bad year for what is generally a good one for potatoes, which increases the value of this excellent root.

We are alluded to the water-meadows, which is this part of the county are extremely well managed. There are two kinds of water-meadows, those irrigated by art work and which are flooded. [Ignoramus.] These water-meadows are made by flooding the lands lying along the rivers or rivulets, and are flat and level naturally or rendered so by art. The water is let on by sluices and channels from the upper part of the stream, and kept in by banks, if necessary, and let off again into the lower part of the stream. The better meadows can be easily ploughed, and will make excellent ploughs. This method requires a greater supply of water and more expensive works. The expense is often from 10l. to 20l. per acre; but the return is so large, that this is a capital extremely well laid out. It is computed that 20,000 acres of excellent water-meadows in this district.

As soon as the after-grass is eaten bare in autumn, the water is let on; all the grips and channels which may have been damaged by the treading of the cattle being repaired. The wheat is sown in May or June, the operations for this season is soon after Michaelmas, when the rains being fine from the hills around. The water generally covers the meadows for a fortnight or three weeks, to give them a good soaking at first, and to make them close and firm by pressure and weight of the grasses. It is then let off till the surface is quite dry again. If any seeps appear on the water during the flooding, it is immediately let off, or it would do harm. When the growth of the grass seems to flag, the water is let off, and they are mowed only. During hard frost it is useful to have all the meadows covered with water, which prevents the first touching of the roots; as spring advances the flooding must be much shorter, till the grass attains the proper size and condition. If at any time the water fails to flood a meadow, or if it lies on a declivity, the catch-work is the only method applicable, and the let on and off of the water is regulated on the same principle. The great value of early and abundant grass for cows and both makes these meadows of the greatest consequence to the sheep-farmer. When they are fed off close, by the end of April or later, the water is let on for a day or two and then let off. In six weeks after a very heavy crop of hay may be made; another short flooding produced this result. A small water-meadow on the Cherchon, six miles from Amesbury, which is usually called the 'long grass meadow.' They contain together only 24 acres; but the crop of hay is sometimes so enormous, that the tithe of it was once sold for five gill. It is found that the crop of one of these, Agrostis Stolonifera is by far the most abundant, in fact almost excluding all other grasses. This is the Florin grass, once so strongly recommended by Dr. Richardson as to cause universal notice amongst agriculturists; but they do not always produce this remarkable result in all cases. Its celebrity had a short run. As the rivulet which supplies the water to these meadows is subject to great variations in different seasons, and sometimes is low in winter, it happens then that very little hay can be cut in summer; but this is not often the case.

As the cows in this district are not such objects of attention as the sheep, the breeders are very various, and few of them of superior quality. The chief dairy is the Jersey, to the breed used in the towns, North Wilton, producing little butter, except whey-butter—its chief produce being cheese.

The Wiltshire sheep are a variety of the Southdown,
but not in general so pure. The original breed was horned, but this has been almost entirely superseded by the polled breed, which produces a finer wool, though not so large a carcass. Of late the size has been an object to the breeder, since fine wool has much diminished in value. An attempt was made in the middle of the last century to cross the English crosses between it and the Southdown, but it did not answer: the sheep were too delicate for the climate and feed, and the superior quality of their wool did not make up for the inferiority of the carcasses. There is probably at this moment not a remnant of Merino blood in any flock in Wiltshire.

The great object in keeping a flock of sheep formerly was to fold them, and for this purpose they must be strong and coarse; where the early ration is the principal object, and a different breed of sheep are required. The Southdown breed was introduced into Wiltshire in 1788, by Mr. Mitchell of Kennebec, and since that time has almost entirely superseded the old Wiltshire breed. Crosses with other flocks through the Merino and the Leicester, to now very common; and since the carcass has become the chief object, these half-breds, as they are called, are thought by some to be most profitable. Their wool is not so fine, but longer, and the fleece heavier.

Large towns have also the same effect on the same as in other counties; the Chinese and Neapolitan breeds having by their crosses improved the original breeds and altered all their qualities, they are reduced in size and bone, and fatten both earlier and in less time: all these things have opened the eyes of the farmers; for many reasons, the advantage of a smaller size has been so readily recognised in the pig, many breeders still aim at the same size in the horse and ox. Experience will perhaps convince them, in the end, that they are wrong, and that, generally speaking, a small animal of perfect symmetry is more profitable than a large one.

North Wiltshire Agriculture.—The north-western district of Wiltshire differs greatly from the southern district. The subsoil in this part of the county, instead of being clayey, consists of a bed of boulders and rubble, generally corn-grate. It is the same as that of the Cotswold Hills in Gloucestershire. These stones serve for building when they are of sufficient thickness, and the thinner layers to cover houses, instead of slate. The top soil is a reddish calcareous loam mixed with irregular flat stones, and commonly called stone-brash. In some places a stratum of clay is interposed between the rock and the top soil, which may easily be known by the oaks which thrive there. These piggots are much the same as in other places, and the subsoil common in the northern parts, with great advantage of a smaller size has been so readily recognised in the pig, many breeders still aim at the same size in the horse and ox. Experience will perhaps convince them, in the end, that they are wrong, and that, generally speaking, a small animal of perfect symmetry is more profitable than a large one.

There is a very fertile vein of gravel, or rather of small shelly-sand with pebbles, covered with a good depth of rich mould, which runs in a broken line from Melksham through Chippenham to Cricklade, but extends wider from Tisbury through the western and northern parts of Wiltshire, and into Somerset. All this vein is very rich land, especially near Downtrey. The porous subsoil keeps the soil dry and warm better than any artificial drainage could do. A less fertile vein of sand runs from Redburn by Seagry, Draycott, and Southwick through Chippenham to Langley, and another begins at the opposite corresponding hill at Charlton, and runs through Bremhill to Branhall. The greatest part of the residue of the soil of this district lies on a rock face of a rough irregular cliff, and is not good till it is relieved by the natural grass, and the grass is of the wild or rough kind: the soil above this rock is mostly retentive of moisture, and consequently cold. Bradon Forest consists of a poor iron-clay fit only for wood, and notoriously ungrateful to the cultivator.

In this district there are a dozen or more of districts, each with distinct characteristics, and probably so from times immemorial. The buildings are well suited to this purpose, and placed conveniently with respect to the surrounding fields. The cheese-lofts are often on a very extensive scale; and all the buildings are kept in a neat and substantial order. Leases are common for 14 or 21 years, and the tenant is prevented from selling hay or straw, which secures his keeping sufficient stock for manure. The implements are similar to those used in the southeastern district. The common fields have been mostly enclosed by acts of parliament, to the great advantage of the

husbandry. Some of the best land has been laid down in grass, and a better system of cropping has been generally introduced, and a cleaner tillage.

The most common rotation in the beginning of this century was that of wheat, oats, turnips, barley, clover mown, then fed, and summer-sown; but the fact is, wheat was not a bad course, but improvements have been introduced according as the soil was heavier or lighter. Folding sheep on wet cold clays is never profitable, and feeding oxen on oil-cakes and hay has only been introduced of late years, and by no means generally. On the lighter soils, barley does not come to such perfection in the heavier soils, which are better adapted to beans and vetches as a preparation for wheat, instead of a too frequent recurrence of clover. The turnips after wheat and oats, with only the sheep-fold to retentive, is not necessary, as the feeding of turnips and fresh grass, and the feeding of sheep on the turnips does not sufficiently enrich it when the crop is light. Most of the cold clays require draining, an improvement of which the farmers are so striking, that it must soon become very general on such soils.

The grass land forms the greater portion of North Wiltshire, and the cheese made there is justly celebrated. It is mostly bought up by factors for the supply of London and the surrounding market; and a large number of dairymen now keep their cows in the stalls from November to April, as they do in Holland. They find the advantage of this practice both to the cows and the pastures; and this art gives them manure for the arable land, as well as the grass land, which is more improved by manuring with rich compost than by the irregular droppings of the dung from the cows in the pastures. The manuring of grass land is generally done immediately after hay-making. This improves the system, and the dairying land and pasture, large land alternately, have done much good to the pastures, and kept them free from docks, thistles, and other weedy.

Much of the heavy wet soils has been improved by under-draining, but a great deal remains to be done. The pastures in the southern part of the county have been adapted to hay-making, but those in the north and west, and if these are only made sufficiently near to each other, the nature of the soil will soon be altered for the better, where it is too wet and cold.

Considering the extent and perfection of the water-meadows in the southern district, it is surprising that there are so few in the northern. This must be ascribed to the difference in the systems pursued on sheep-farms and dairy-farms. There is not the same necessity for a rich food for calves in spring; and upland dairy land is preferred by many to lowland meadow hay; yet the advantage of water-meadows for cows, as well as sheep, should have drawn more attention to their formation.

The breed of milch-cows is an object of greater attention in this part of the county than in the south in general. This breed was formerly in high repute, as the old cows fattet well and produced good prices from their weight. Each cow of the large breed will give from 3 to 4½ cwt. of cheese in a season, if she calves in proper time. But if more cows are fed on the same land, they will adapt the grass in every acre produce more cheese, whatever each cow may give, the smaller cow is evidently the most profitable; besides, smaller animals require less food, and will thrive where the larger would fall off. It will probably be found, in the end, that good breeds of small cattle are the most profitable. The best are the Astray cows and the small Suffolk polled breed. The North Devon are sometimes excellent milkers, and they certainly are the handsomest breed. A great many cows are fattet in the dairies, when they are dry or have missed calving.
There are very few market-gardens or orchards in this district, and no cider is made. Vegetables are only raised for sale near the towns; every farm having as much garden as the family requires, and no more. The woods have diminished greatly all over the county, which was once very well wooded; and the fuel and wood from coal, the decay of the woods begins to feel. If plantations were judiciously made, there is no doubt but they would ultimately pay well. Much of the land is peculiarly suited to the growth of timber and uncultivated.

The sheep in this district are mostly the same as in the southern portion of the county, and although there are not so extensive sheep-pastures, there is usually a flock attached to every arable farm, and folding is one of the chief modes of cattle. On the fields, cattle fattened in yards would probably produce manure of a better quality for turnips, and would be more economically fattened than sheep, for which there is not always sufficient feed at all times of the year for want of water-meadows.

Many pokers are fitted in the dairies on the whey, after it has been skimmed and whey-butter made, and the breed of pigs has been much improved of late by judicious crossing with small-boned breeds, which fatten earlier and in less time. There is nothing peculiar in the breed of hogs consumed on the farms, are mostly imported young from other counties.

There are many excellent markets in Wiltshire; the principal corn-markets are Warminster, Devizes, and Salisbury. Swindon and Salisbury are the best for cattle-markets. Marlborough is a great market for cheese, although most of it is contracted for by factors, who take the whole produce to London, Bath, and Bristol.

The principal fairs in Wiltshire are:—Amebury, May 17, June 7, July 7, and Oct. 2; Bradford, Trinity Monday; Bridgford, Aug. 12; Calne, May 6, Sept. 22; Chippenham, May 17, June 22, Oct. 29, Dec. 17; Corsham, Holy Thursday; Whitchurch, second Thursday in April, Sept. 21; Devizes, Feb. 13, April 20, Holy Thursday, July 5, Oct. 2, and Christmas; London, Easter Monday, Sept. 24; Downside, April 23, Oct. 2; East Lavington, Aug. 10; Great Bedwyn, April 23, July 26; Heytesbury, May 14, Sept. 25; Highworth, Aug. 13, Oct. 11, 29; Hindon, Monday before Whitsunday, Oct. 29; King’s Down, Wednesday before St. Matthew’s day; Liddesdale, July 25; Marden, June 5, Oct. 2; Melksham, March 28, April 28, June 6; Marlborough, July 10, Aug. 22, Nov. 6; Melksham, July 27; Mere, May 17, Oct. 10; Norcester, April 23; Purton, Tuesday before May 0, Thursday Easter; Redvers, May 14, Oct. 2, and Christmas; Salisbury, Tuesday after Jan. 6, Whit Monday and Tuesday; Tisbury, Monday before Easter, May 2, second Monday after May 12, Sept. 11, second Monday in Dec.; Tidworth, Aug. 5; Trowbridge, April 23, Sept. 22, Oct. 29; Warminster, May 1, Nov. 17; Westwood, Easter Monday; Whit Monday; Whorwell, Nov. 17; Wilton, May 4, Sept. 12; Wootton-Basset, May 4, Nov. 13, Dec. 19; Yeovil, Oct. 4.

Divisions. This county is divided into twenty-eight hundreds, which, with their respective positions in the county, areas, and population in 1831, are as follows:

<table>
<thead>
<tr>
<th>Hundred</th>
<th>Position in the County</th>
<th>Area in Acres</th>
<th>Population in 1831</th>
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</thead>
<tbody>
<tr>
<td>Alderbury</td>
<td>S.E.</td>
<td>31,760</td>
<td>4,460</td>
</tr>
<tr>
<td>Amebury</td>
<td>E.</td>
<td>42,620</td>
<td>6,611</td>
</tr>
<tr>
<td>Bradford</td>
<td>W.</td>
<td>18,700</td>
<td>11,604</td>
</tr>
<tr>
<td>Branch and Dole</td>
<td>Central</td>
<td>39,440</td>
<td>8,500</td>
</tr>
<tr>
<td>Chippenham</td>
<td>S.</td>
<td>23,100</td>
<td>4,532</td>
</tr>
<tr>
<td>Cheltenham</td>
<td>N.W.</td>
<td>65,160</td>
<td>20,460</td>
</tr>
<tr>
<td>Damerham, North part</td>
<td>Central</td>
<td>27,600</td>
<td>6,092</td>
</tr>
<tr>
<td>Downon, South part</td>
<td>S.W.</td>
<td>23,500</td>
<td>6,815</td>
</tr>
<tr>
<td>Dunworth, or Danworth</td>
<td>S.W.</td>
<td>26,650</td>
<td>7,477</td>
</tr>
<tr>
<td>Elstow and Kerverly</td>
<td>E. (and</td>
<td>40,060</td>
<td>7,592</td>
</tr>
<tr>
<td>Fromestfield</td>
<td>S.E.</td>
<td>8,320</td>
<td>1,480</td>
</tr>
<tr>
<td>Heytesbury</td>
<td>S.W. and Central</td>
<td>38,570</td>
<td>5,866</td>
</tr>
<tr>
<td>Highworth, Cricklade, and Biplas</td>
<td>N.</td>
<td>51,590</td>
<td>12,255</td>
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</tbody>
</table>

65,090 240,156

The city of Salisbury is included in Underditch hundred, the borough of Devizes in Poterne and Canings hundred, and the borough of Marlborough in Selker hundred.

Wiltshire contains the county-town and city of New Sarum, or Salisbury; the parliamentary borough of Calne, Chippenham, Cricklade, Devizes, Melksham, Marlborough, Westbury, and Wilton; the disenchanted borough of Old Down, Downside, Heytesbury, Malmsbury, Malmesbury, Selkirk, Old Sarum, and Wotton-Basset; and the market-towns of Amesbury, Great Bradford, Corsham, Highworth, East or Market Lavington, Melksham, Mere, Selkirk, Trowbridge, and Warminster. Some of these places are described in separate articles:—[AMEBURY; BATH (GREAT); CALNE; CHIPPENHAM; CRICKLADE; DEVIZES; SALISBURY; SARUM.] Of the rest we subjoin an account.

Malmsbury is in the hundred of Malmsbury, 10 miles from the General Post-Office, London, by the Great Western and by the Midland Counties Railway. It is 8 miles from Devizes, 24 miles from Swindon, and 12 miles from Highworth. According to an anonymous history of Malmsbury priory, compiled in the mid-fourteenth century, and quoted by Leland in his Collectanea, there was a town here with a castle, reputed to have been built by Bo- wallo Malmutiu, one of the Britons kings to have resisted the Roman invasion. The town was afterwards destroyed by foreign invaders, but the castle remained, and near its walls a Scottish monk, called Maidelph or Meldalp, who had been so worried in his own country as to escape hither, were reared for the Danish invaders of the ninth and tenth centuries. In the twelfth century, the town was twice burnt; but it recovered, and being enriched by lands and crowned venerable by relics, became one of the most important monasteries in the north of England. This abbey, built by Prince Harold, after the battle of Stamford Bridge, and had the residence of kings both pagan and Christian, but without distinguishing whether Saxon or Saxon. This partly fabulous narrative may perhaps indicate that there were at Malmsbury at a very select period a castle and a town. Maidelph founded his monastery in the seventh century, and from him the modern name Malmsbury, a corruption of Maidelphsburh, appears to have originated. It is probable that the abbey suffered from the Danish invasions of the ninth and tenth centuries when the town was twice burnt; but it recovered, and being enriched by lands and so venerable by relics, became one of the most important monasteries in the north of England. The abbey was at first dedicated to St. Mary, and was afterwards dedicated to St. John the Baptist. The yearly revenues of the abbey at the dissolution were 803L. 17s. 7d. The town appears to have had a charter as early as the reign of Athelstan, when the inhabitants are said to have been granted the right to hold a market. In the reign of Stephen a castle was built here, and the town was walled by Roger, bishop of Sarum, who was however obliged to surrender the castle to the king. In the civil war of Stephen and Maud, the town and castle were taken by the Danes, and held by Prince Harold, after the battle of Stamford Bridge, and was afterwards held by Prince Harold. In the civil war of Charles I., the royalists had a garrison here, which was driven out by Sir William Waller, at the head of a parliamentary army, March 1643. The royalists recovered the place, but it was again
taken by the parliamentarians under Colonel Massey, or Massie, who stormed it, a.d. 1645. The cloth-trade flourished in the middle ages, according to the testimony of Leiland, who says that 3000 'clothes' (pieces of cloth) were made yearly. These buildings were converted into a cloth-factory by one Stumpa, a clothier, to whom the king had granted them.

The town stands on an eminence in the middle of land formed by the junction of the Avon and the stream (Le-

land, if not the Newtonwater). There are two

borough, and consists of some streets irregularly laid out,

but paved and lighted. The town does not extend much

beyond the limits of the municipal and old parliamentary

borough, which comprehends the abbey parish or district,

and county and all the parishes. The chief object of this

report; the chief part of these parishes is without the bo-

weight limits, but the population returns do not discrimi-

nate between the in-parts and out-parts. The statistics of

the three parishes, in 1831, were as follows:

<table>
<thead>
<tr>
<th>Family</th>
<th>Houses employed in</th>
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<tbody>
<tr>
<td>Is. Unite.</td>
<td>Agri. &amp; Trade.</td>
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</table>
| Acres. | Total. | Per.
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</table>

Of the population 2334 persons were comprehended in
the old borough. By the Boundary Act several adjacent
parishes were added to the borough for parliamentary pur-

poses, enlarging the population to 6165. There are two

churches—the Abbey church and St. Mary's, and the

remains of a third—old St. Paul's. The Abbey church

was, at the dissolution, purchased by the inhabitants of St.

Paul's parish, and made parochial. It is well described

in Leiland's Itinerary; it was the seat of the Westover

cross-church; the central tower had fallen before Lo-

land's time, and now but a small part of the church re-

 mains, that is to say, part of the nave and aisles, the

grand southern porch, and a wall belonging to the south

nave. The upper part of the western tower, which

was standing in Leiland's time, has since fallen, and the part

of the nave immediately adjacent to it is dilapidated, so that

the part now used stands in the midst of ruins. The ar-

chitectural work of remains the west front and the ad-

jacent parts are decayed; and it is not improbable

which is beautifully enriched, is Norman; the rest of the

nave appears to be chiefly of decorated English charac-

ter. The interior is a mixture of the Norman and the

English or pointed style. In the interior, near the altar,

is a large altarpiece of architectonic fragments, inclosing a

space in which stands an altar-tomb, with an effigy in

royal robes, said to represent King Athel-

stan, who was buried in the church of Malmesbury Abbey;

the tomb is however of much later date than that prince;

and is now far from the place of his interment, which was

in the choir, under the high altar. There were formerly

three churches in the churchyard of the Abbey; namely,

the Abbey church just noticed; the old parish church of St.

Paul's, of which the lofty tower is still standing; and an

old abbey or church of the same name, which was used as

a belfry, while the church itself, now completely destroyed

from the tower, is occupied as a dwelling-house; and a

little church, which Leiland describes as 'a very old piece

of work,' used in his time as a cloth-factory, and now alto-

gether destroyed. The church of the abbey, now the Westover

mean-looking building, erected nearly two centuries ago

on the site of the old church, which was destroyed by Sir

William Waller. There is near the Abbey church a house,

the lower part of which was probably part of the abb's

hall. It is a more sumptuous and ancient cross in the market-place, which

Leiland records as having been built within the memory of men; and west

of the Abbey is a building called Chapel-house, supposed to

have been originally the chapel of a nunnery which

Leiland has preserved notice of, or traditions of two other nunneries in or near the town.

The White Lion Inn is thought to have incorporated in it

some remains of an hospital or house of entertainment

belonging to the abbey; and the corporation almshouse,

near one of the bridges over the Avon, is supposed to

comprehend some remnants of an establishment of the

Knights Hospitallers. There are some fragments of the
town walls.

There are several dissenting places of worship, and four

houses—two over the Avon and two over the Newton-

water. Malmesbury has little trade or manufactures: the

clothing trade gives employment to a few persons, and

ware, brewing, and lace-making are carried on. The

market returns on Saturday, and there were a large cattle-

markets or fairs for horses, cattle, and sheep.

The borough has returned members to Parliament with

little interruption since the time of Edward I. By the

Reform Act it was reduced from returning two members and one

return only one member. By the Boundary Act the limits

and population of the borough were much enlarged. It

is not noticed in the Municipal Corporations Reform Act.

The living of St. Paul's is a vicarage, united with the

parochial curacy of St. Peter's, which is in the parish of St.

Paul's, and is in the joint clear yearly value of

265s., in the rural deanery of Malmesbury, in the

archdroncy of Bristol, in the diocese of Gloucester

and Bristol. The living of St. Mary Westport is a vicarage,

united with the adjacent parochial churches of

Borough and Charlton, jointly the clear yearly value of

310s., in the same ecclesiastical divisions as St. Paul's.

The parish of St. Paul's and the abbey district com-

prehended, in 1831, eight day-schoools of all kinds, with

265 scholars, namely, six boys and 49 girls; two other

than one in eleven of the population under daily instruction.

One of these day-schoools was an endowed school, with

15 boys; two were national schools, with 60 boys and

45 girls. The national schools were attended on Sundays

by 70 boys and 47 girls, and on school-days by 500

boys, with 405 scholars; giving 520 scholars, or above

two in nine of the population, under instruction on

Sundays. There was no return made from the parish of St.

Mary Westport.

Three writers of eminence in their respective ages

connected with Malmesbury:—St. Aldhelm, a Saxon

writer of note in the seventh and eighth centuries, was for a

time abbot of Malmesbury, where he was interred; William

of Malmesbury, one of the best English historians of the

middle ages, was a monk of the abbey; and Thomas

Hobbes, sometimes designated the Philosopher of

Malmesbury, was a native of the parish of St. Mary Westport.

Marbleford is in Selkirk hundred, 734 miles from the

General Post-office, London, by the General Western Rail-

way, and 3 miles from the Nursery of Newbury and

Hungerford. Some antiquaries have pro-

posed to fix the Roman station Cunetio, of Antoninus,

at Folly Farm, close to Marbleford; and the evidence in

favour of this opinion is strong. There is a bowl

Marleborough in the time of Richard I., which was

seized during his imprisonment by his brother John; but

on Richard's return it was reduced under the king's

power. A parliament or assembly was held here in the

time of Henry III., the provisions in which are called

the Statutes of Marlbridge, one of the older forms of the

name, which in Domesday is written Marliberge.

The site of the castle is covered by a large house, which was a seat

of the dukes of Somerset, and was afterwards used as the

garrison of the army. Within the last year it has been

fitted up as a Clergy School, and has been opened with

good prospect of success. The mound of the antient keep

is in the garden. The municipal and old parliamentary

borough comprehends the two parishes of St. Mary

and St. Peter; the statistics of which in 1831 were as follows:

<table>
<thead>
<tr>
<th>Family</th>
<th>Houses employed in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is. Unite.</td>
<td>Agri. &amp; Trade.</td>
</tr>
</tbody>
</table>
| Acres. | Total. | Per.
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</tbody>
</table>

The parish of Presbute or Manton was added by the

Boundary Act for parliamentary purposes, and enlarged

the population to 4196 persons.

The town of Marlborough consists chiefly of one wide

street running from east to west, and lined with houses, irre-


gularly built, and many of them old. Most of the houses are of brick. The streets are roughly paved on each side with large stones or pebbles taken from the downs adjacent. The market-house for cheese, butter, and corn, is at the east end of the street: it is an antient building, having in its upper story a council-chamber, assembly-rooms, and committee-room, where a committee of the drapers' market assembled near it. The churches are both in the main street, with St. Mary's at its eastern end, near the market-house; it is an old church with a freestone tower at the west end, with a Norman doorway enriched with zigzag ornament: the church is dedicated to St. Peter and St. Paul. There is a church near the street, adjacent to the Castle Inn, and has a lofty square tower with battlements and pinnacles. There are, on the south side of the street, some remains, now converted into a private house, of an antient priory for the regular Canons of St. Augustine. There are several Dissenting places of worship in the town.

The trade of Marlborough is not great; it is chiefly in coal, corn, and malt. Before the opening of the Great Western Railway, it was a great thoroughfare, and one of the chief posting towns between London and Bath and Bristol. There is a small market on Wednesday, and a more important one on Saturday; and several yearly fairs. Marlborough is a borough by prescription; the corporation, under the Municipal Corporations Reform Act, has four aldermen and twenty-one councillors, with no commutation of the franchise or peace. It sends two members to parliament; its boundaries were enlarged by the Boundary Act. The living of St. Mary's is a vicarage of the clear yearly value of 100L. with a glebe-house; that of St. Peter and St. Paul is a rectory of the clear yearly value of 130L.; both are in the rural deanery of Marlborough, in the archdeaconry of Wilts, and the diocese of Salisbury. There were in the borough, in 1833, twelve day-schools of all kinds, with 531 scholars, namely, about 200 boys, 236 girls, and 93 children of sex not distinguished in the return; giving between one in six and one in seven of the population under daily instruction. One of the day-schools was a small but well-endowed grammar-school; and one, a national-school, with 67 boys and 65 girls. On Sunday-schools. There were besides two Sunday-schools with 117 boys and 154 girls; giving in all 433 children, or one in eight of the population, under instruction on Sunday.

Henry of Marlborough, an historical writer of the fourteenth and fifteenth centuries; Obadiah Sedgewick and Christopher Fowler, eminent puritan divines of the seventeenth century; John Hughes, the poet and dramatist; Harte, the historian of Gervasius Adolphus; and the well known Dr. Sacheverell, were all natives of Marlborough. Wilton, on the western side, 102 miles W.S.W. from the General Post-Office, London, by the South-Western Railway to Basingstoke, and from thence by Andover, Ludgershall, Rushall, and Market Lavington. It is a place of considerable antiquity, and a number of Roman coins have been cleared up in the vicinity, and one ancient coyness have proposed to fix here the site of the Antonine station Verucio, but the opinion is not general. Little is known of the antient condition or history of Westbury: it was incorporated by Edward I. by charter, and sent members to parliament in the time of Henry VI. The statistics of the parish in 1831 were as follows:—

**Families**

- Houses
  - Employed in
    - Agriculture
    - Market
    - Other Total.

**Parish**

- Area in 1000 acres
  - Populous
  - Acres
  - lab.
  - hab.
  - Build.
  - Total culture
  - cc. Others
  - Total.

**Westbury**

- Borough
  - Total
  - Acres
  - lab.
  - hab.
  - Build.
  - Total culture
  - cc. Others
  - Total.

**Houses**

- Total
  - Employed in
  - Agriculture
  - Market
  - Other

**Population**

- Total
  - In 1000 acres
  - Populous
  - Acres
  - lab.
  - hab.
  - Build.
  - Total culture
  - cc. Others
  - Total.

**Wilton**

- Borough
  - Total
  - Acres
  - lab.
  - hab.
  - Build.
  - Total culture
  - cc. Others
  - Total.

The old borough comprehends only a part of the town; it was augmented by the Boundary Act by the addition of the other parts of the parish. The town consists of one long crooked street and of some smaller streets, irregularly laid out. The church of St. Mary, Leigh forms another street, separated by an interval of open road from the principal street. The church is a large antient building, with a central tower and a fine west window, and several monuments. A handsome town-hall was erected, a.d. 1815, by Sir John Thynne, the then proprietor of the borough. The clothing manufacture is carried on in the parish, though not to the same extent as formerly; it gave employment in the whole parish, in 1831, to 200 men, besides women and children. The market is on Friday, and there are two considerables yearly fairs for cattle, horses, pigs, sheep, and cheese.

The borough was formerly very close: the corporation is not noticed in the Municipal Corporations Reform Act. The living of Westbury is a vicarage united with the chapelry of Dilton and Bratton, of the joint clear yearly value of 200L., with a glebe-house, in the rural deanery of Wiltshire, in the archdeaconry and diocese of Salisbury, but in the peculiar jurisdiction of the precentor of Salisbury cathedral. The parish of Westbury contained in 1831 1,558 souls, in 314 houses, of which 787 were inhabited, with 753 persons, in 277 houses, being the inhabitants of the town, and 521 persons, in 361 houses, being the inhabitants of the country. The population is chiefly augmented by the large market, held in the town on Sunday. The market is of great antiquity, and its former importance is indicated by the circumstance of its having given name to the county, which is called in the Saxon Chronicle Wilton, and which appears to have obtained its name from the river Willy (Wilton), on which it still stands. It was the scene of one of Alfred's early battles with the Danes (a.d. 871), and some have supposed to be the Eftelunde of the Saxon Chronicle and other ancient authorities, where Egbert conquered (a.d. 803) the Mercian King Beornwulf, and established the perpetual supremacy of the West Saxon dynasty. Wilton was an occasional residence of the West Saxon kings; and an abbey was founded here for nuns, which was either originally or soon became a Benedictine monastery. It was plundered and burnt by the Danish King Svend in the reign of Ethelred II. (a.d. 1003), but appears to have so far recovered as to be a place of importance at the time of the Conquest. It received a charter from Henry I. In the civil war of Stephen, the king was said to fortify the monastery in order to check the advance of Maud the empress had made to Old Sarum, when he was attacked by the army of the queen, led by Robert, earl of Gloucester, the empress's chief supporter. The yearly revenue of the abbey, dissolved by Edward I., was 6522. 11s. 4d., gross, or 601l. 12s. 4d. clear. Wilton was for a time (a.d. 909-1043), or later, the seat of a bishopric formed by the dismemberment of the extensive See of Bath and Wells. The church of St. Peter and St. Paul, now a large manor house, was before the removal of the see to Sarum. [SERTM.]

In statistics of the borough and parish of Wilton in 1831 were as follows:—

**Houses**

- Area in 1000 acres
  - Populous
  - Acres
  - lab.
  - hab.
  - Build.
  - Total culture
  - cc. Others
  - Total.

**Population**

- Total
  - In 1000 acres
  - Populous
  - Acres
  - lab.
  - hab.
  - Build.
  - Total culture
  - cc. Others
  - Total.

The borough has been enlarged for parliamentary purposes, by the addition of the parishes of Fingeston, Under-

ford-under-the-Castle, Grimsell, Northumberland, South Newton, Wishford, Barford, Burcombe, Netherham-"
The town hall at Hatherleigh is a notable building, and there are places of worship for Methodists and Congregationalists. The church is a large stone church with a stone and slate shingles, shingled and pointed, with a tower at the intersection of the nave and chancel, it contains a number of monuments.

There are two Sunday-schools, with Slaggy, and Sunday schools included in the above figures. One Sunday-school has 150 children, and the other 100 children, and a total of 250 children are taught.

The town hall at Hatherleigh is a notable building, and there are places of worship for Methodists and Congregationalists. The church is a large stone church with a stone and slate shingles, shingled and pointed, with a tower at the intersection of the nave and chancel, it contains a number of monuments.

There are two Sunday-schools, with Slaggy, and Sunday schools included in the above figures. One Sunday-school has 150 children, and the other 100 children, and a total of 250 children are taught.
or one in six of the population under instruction on Sundays.

Ludgershall is in the hundred of Amesbury, 74 miles from the General Post-Office, London; by the Great Western Railway, to Bristoe, and from thence by Andover. The town is called Littlegarsele in Domedey. It had a castle erected soon after the Norman Conquest, of which there are some remains. It sent members, though not uninterruptedly, from the time of Edward I, to the passing of the Reform Act, when it was disfranchised. The borough is not noticed in the Municipal Corporations Reform Act. The statistics of the borough and parish, in 1831, were as follows:—

<table>
<thead>
<tr>
<th>Area in acres</th>
<th>Inhabited. Uninhabited. Building. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600</td>
<td>116 4</td>
</tr>
<tr>
<td>Persons</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td></td>
</tr>
<tr>
<td>26 118</td>
<td>536</td>
</tr>
</tbody>
</table>

The town is in a pleasant situation: the streets are neither paved nor lighted. The church is of irregular form, with nave, chancel, and two transepts of very unequal dimensions. The nave and chancel are separated by a pointed arch, the archway being occupied by a wooden screen, and there is a low squint or western tower of irregular shape, built of flint and brick. The market has long been given up, but a mutilated stone cross distinguishes what was formerly the market-place. There is a considerable vicarage. The living is a vicarage of the clear yearly value of 374L, in the rural deanery of Amesbury, in the archdeaconry and diocese of Salisbury. There were in the parish, in 1833, three day-schools, supported by subscription, with 46 scholars, viz. 28 boys and 18 girls, giving instruction to one in every four of the population under daily instruction. There were no Sunday-schools.

Wootton-Basset is in Kingsbridge hundred, 87 miles from the General Post-Office, London, by the Great Western Railway, which passes near the town. It is called in Domedey, Woteitone; and was held by Milo Crispin, but afterwards passed to the Bassetts of Wycombe, from whom it obtained its distinguishing epithet. The town sent two members to parliament from the time of Henry VI, to the passing of the Reform Act, when it was disfranchised. It is on an elevated site, and consists chiefly of one street along the road from Cricklade to Calne, lined with houses, built chiefly of brick and thatched. The statistics of the borough and parish, in 1831, were as follows:

<table>
<thead>
<tr>
<th>Area in acres</th>
<th>Inhabited. Uninhabited. Building. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4530</td>
<td>460 122</td>
</tr>
<tr>
<td>Persons</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td></td>
</tr>
<tr>
<td>258</td>
<td>529</td>
</tr>
</tbody>
</table>

The church is an ancient structure in the centre of the town. The market is on Tuesday, and there are six yearly fairs. The corporation is not noticed in the Municipal Corporations Reform Act. The living of Wootton Basset is a vicarage of the clear yearly value of 461L, with a glebe-house, in the rural deanery of Avebury, in the archdeaconry of Wilts, in the diocese of Salisbury. There were in the parish, in 1833, nine day-schools, with 197 scholars, namely, 38 boys and 59 girls, and 121 children of sex not stated, giving from one in nine to one in ten of the population daily instruction. In the Sunday-schools, with 214 scholars, namely, 100 boys and 54 girls, and 60 children of sex not stated in the return, giving about one in nine of the population under instruction on Sunday.

Highworth is in the hundred of Highworth, Cricklade, and Staple, 79 miles from the General Post-Office, London, by the Great Western Railway to Shirehampton, which is distant from Highworth four miles. The parish has an area of 961 acres; it is divided into seven chapels or tythes, and contained, in 1831, a population of 3127. Highworth tything had at that time 130 houses, namely, 123 inhabited, 6 uninhabited, and 1 building, with a population of 124 families, or 632 persons, about one-sixth agricultural. The traffic is on a hill by the road between Lechlade and Swindon: it is neither paved nor lighted. The houses are mostly built of stone, of which there are quarries in the neighbourhood. The church is in the middle of the town; it is an ancient building, having a chapel on the south side, hung round with pieces of ancient armour; it is a Gothic structure. On Wednesday, and there are two yearly fairs, namely, a cattle fair and a statutory fair for hiring servants. The town was formerly incorporated, but lost its privilege of sending members to parliament through disease, and the corporation has ceased to exist. The town is a vicarage with chapels of Broad Bumpstead, South Marston, and Sevenhampton, all in the parish, at the joint clear yearly value of 463L, with a glebe-house, in the rural deanery of Cricklade, in the archdeaconry of Bristol, in the diocese of Gloucester and Bristol. There were in the whole parish, in 1833, 500 children, and four other day-schools, with 159 scholars, namely, 117 boys and 42 girls, giving about one in five of the population under daily instruction; and three Sunday-schools, with 417 scholars, namely, 225 boys and 192 girls, giving about one in the week. One of the Sunday-schools was partly supported by endowment and subscription.

East or Market Lavington is in the hundred of Swavesey, 113 miles from the General Post-Office, London, by the Great Western Railway to Chippenham, and from thence by Devizes. The parish, including the tything of Easterton, has an area of 594 acres, and had, in 1831, 330 houses, namely, 319 inhabited, 7 uninhabited, and 4 empty. There, with a population of 1523 persons, namely, about two-thirds agricultural. The town is at the valley between the green sand and chalk hills on the north-west side of Salisbury Plain; the two principal streets cross each other at right angles; and the hamlet of Easterton, nearly 1 mile from the town on the north, is an ancient town in the town, and is of Gothic architecture of the later perpendicular period. The market, if continued, is on Wednesday, and there is one yearly fair. The living is a vicarage, of the clear yearly value of 300L, with a glebe-house, in the rural deanery of Lavington, in the archdeaconry of Wilts, in the diocese of Salisbury. There were in the whole parish, in 1833, five day-schools with 87 children, namely, 26 boys and 46 girls, and 15 children of sex not stated, giving about one in seventeen of the population under instruction on Sunday. In the Sunday-schools, with 262 scholars, namely 121 boys and 141 girls, giving one in six of the population under instruction on Sunday. Bishop Tanner, author of "Notitia Monastica," was a native of Market Lavington.

Melksham is in the hundred of Melksham, about 91 miles from the General Post-Office, London, by the Great Western Railway to Chippenham, and from thence through Laycock. At the time of the Domesday survey the manor belonged to the crown, and is stated to have been a place of some consequence; but it afterwards declined, and continued in obscurity until it was revived by the introduction of the cloth manufacture; but that branch of industry has of late years somewhat declined. Some of the ancient mineral waters were discovered in the town; and hot and cold baths have been established, and houses built for visitors to the Spa. The parish has an area of 8920 acres, without including the chapel of Seend, which is a dependency of it: it had, in 1831, 366 houses; namely, 942 inhabited, 48 uninhabited, and 5 building, with a population of 973 families or 4722 persons, about two-sevenths agricultural. The town consists principally of one long winding irregular street, chiefly along the road from Bath to Devizes, but parallel to the road from Blandford. One part of the town is divided by the river Avon, over which is a bullock-stayed stone bridge of four arches, from a suburb called the city, a design which has led to the conjecture that it was built by a Roman station. The history or tradition to think it was. The houses, which are of stone, are of neat appearance; and the main street is paved and lighted with gas. The church, which backs from the street, on the west side of the town, is a one church, with some Norman remains, which rise early from the intersection of the nave and transept, and two chancel chapels on the south side. There are place of worship for Baptists, Independents, Wesleyans, and Quakers. The principal manufacture is the cloth and hosiery, with some corn. The population, in 1831, about 170 men. The market is held once a fortnight for cattle, pigs, &c. on Monday; and there is one yearly fair.
There are petty sessions once a fortnight, and a court for the recovery of small debts is held once in three weeks. The living is a vicarage, united with the chapelry of Seend, Earl-Stoke, and Shaw, of the joint clear yearly value of £165, with a glebe-house, in the rural deanery of Potter, in the archdeaconry of Wilts, in the diocese of Salisbury.

There were in the parish, without including the chapelry of Seend, in 1833, five day-schools of all kinds, with 320 scholars; namely, 180 boys, 90 girls, and 59 children of school age, and twenty-two street schools, with 675 scholars, of sex not stated in the return; giving one in fifteen of the population under instruction daily, and one in seven under instruction in the week. One of the day-schools was an infant-school, with 50 children; and two others were for infants and children, with 200 children, of both sexes; all three partly supported by subscription, and the Lancasterian schools having also a small endowment.

Mere is in the hundred of Mere, 104 miles from the General Post-Office, London, by the South Western Railway to Basing-stoke, and from hence to Andover, Amesbury, and Hindon; or 22 miles west of Salisbury through Basing-stoke, with its market-town, and on the road from London and Salisbury to Winchester and Exeter. The church, which is on the south side of the town, is a handsome Gothic building, chiefly of perpendicular character, having a western tower, with battlements and a spire. The town contains 2,000 persons; and has a market-day on Tuesday, and a fair on the third Wednesday after Trinity Sunday. There are two large yearly fairs. The living is a vicarage, of the clear yearly value of £280, with a glebe-house, in the rural deanery of Wiltshire, in the archdeaconry of Wilts, in the diocese of Salisbury. The parish contained, in 1833, nine estates of 300 acres, with 12 manors; 201 households, with 1,178 persons, of whom 450 were males, and 728 females; 181 inhabitants, and 399 acres of waste and heath; one school, with 40 boys and 10 girls; supported by an endowment.

Trowbridge is in the hundred of Melksham, 120 miles from the General Post-Office, London, by the Great Western Railway to Bath, or the Bath and North Western via Swindon, with its castle or fortress, which was garrisoned by the supporters of the Empress Maud, and taken by the king's forces. John of Gaunt either repaired this castle or built a new one; but it was burned down in 1360. He told the townsmen that there was only a part of two. The castle stood on the south side of the town, near the river Wilt. There are no remains now, and its site is built over. The parish contained, in 1801, 2,580 houses, and 1,195 inhabited, 1,915 uninhabited, and 3 building; with a population of 2,073 families, or 10,863 persons, a very small part agricultural. The town is on a rocky hill on the north-east bank of the Wilt, a tributary of the Avon; it was probably in the time of the Romans, and it has for a spacious edifice, with a nave, chancel, two aisles with chapels attached to their eastern extremities, a north and a south porch, and a large western tower and spire. The ceiling of the nave is flat, and is ornamented with rich inlay-work. There are two district churches or chapels-of-ease in the parish, namely, Trinity church or chapel in the town, and Staverton chapel, in the hamlet of Staverton, about two miles from the town. There are four public schools, two for boys and two for girls, and a day-school for young persons; a general and particular Baptist chapel, and a Wesleyan chapel. And there are two district schools for infants, one in the town, and one at Staverton. Trowbridge is the largest town in the county and one of the largest in the west of England. The clothing trade is of considerable antiquity here. Eardis says of Trowbridge, 'Here is a very rockie hill, with a good build of stone, and florishing by drapery.' He mentions some of the great clothiers of the place, and records their benefactions to the town. The market is on Saturday; some of our authorities give the place three markets weekly, on Monday, Saturday, and Saturday and Sunday, which last day seems to be the fair. Petty sessions are held monthly, and there is a court of requests for the recovery of small debts, which holds its sittings every three weeks. The living is a rectory united with Staverton, and worth £500 a year, and is held by the Rev. Dr. Wharton, of the see of St. Asaph. There are four churches in the town, and six or seven in the surrounding district. There are numerous chapels and places of worship. The market is on Monday for corn and other commodities, and for cattle every alternate Monday; there are five yearly fairs. There is a mill, with an overshot wheel of unusually large diameter, which is supposed to be the remains of a old watermill, of the same formation as the Portland stone, which employs a considerable number of men; the stone is used for troughs, t offices, miles-stones, &c. The living is a vicarage, of the clear yearly value of £200, with a glebe-house, in the rural deanery of Bristol, in the archdeaconry of Bristol, in the diocese of Gloucester and Bristol. There were in the parish, in 1833, seven day-schools of all kinds, with 185 scholars; namely, 92 boys and 93 girls; and three Sunday-schools, with 194 scholars; namely, 84 boys and 110 girls; giving between one in nine and one in ten of the population under instruction daily, and one in seven under instruction on Sundays. One of the day-schools, with 40 boys and 10 girls, was supported by an endowment.
and comprised, in 1831, 1308 houses, namely, 1236 inhabited, 37 uninhabited, and 13 building; with a population of 6151 souls. About three miles west of the Wiltshire, is the town of Chippenham. The town is in a very healthy situation, close to the western border of Salisbury Plain, in the valley of the Wilt, the north of the river itself: it consists of several streets, the principal one of which, trending along the road from Salisbury to Frome. The principal street is well paved; and the general appearance of the town is neat and respectable. The parish church stands on the north side of the town, on the Bath Road, and is dedicated to St. Denis: it is a handsome and large edifice, built of stone, and is considered the most ancient church in the town, and is now used as a chapel of ease.

Some scholars, of the early 19th century, have questioned the antiquity of Selkley, or Selkley-with-Salterne, founded as a town in the time of Edward I., and now used as a chapel of ease. There are places of worship for Baptists, Independents, Wesleyan Methodists, and Presbyterian Unitarians. There is a handsome town-hall erected on the market-place, with a handsomely set of rooms for assemblies, public meetings, &c. The market is held on Saturday, and there are three yearly fairs. The market is a considerable corn-market, though it has been injured by the rivalry of Devizes, which has a considerable trade in cattle. The fact that Salisbury is a market town is called, by way of eminence, 'the great fair,' and is a considerable cattle, sheep, and cheese fair. The woollen manufacture which was formerly carried on is now almost extinct, and the silk manufacture, which was introduced some time since, is now of little importance.

It 1931, thirty-seven-day schools of every kind, with 911 scholars, namely, 494 boys and 417 girls; nine Sunday-schools, the national school, which was a grammar school also, with 1061 scholars, namely, 555 boys and 506 girls; giving above one in seven of the population under daily instruction, and above one in six under instruction on Sundays. Of the day-schools, twenty-three schools, with 350 scholars, were dame-schools or other schools for small children; one was a national school with 140 boys and 60 girls, and 40 girls additional on Sundays; one was a Lancing school with 80 girls; and one was an endowed grammar-school with 48 boys. These schools are entitled to notice. Aldbourne (colloquially pronounced Aubourn) is in the hundred of Selkley, about six miles north-east of Marlborough. It is beautifully situated in a valley, and was anciently a place of importance. In modern times, it has twice suffered severely from fire. In 1760 a conflagration destroyed more than seventy houses; and in 1817 twenty were consumed. The earl of Essex was burned here by the royalists in the great civil war A.D. 1643. Aldbourne Chace, an extensive waste, with a large rabbit-warren on the north and north-west of the village, was formerly well wooded and stocked with deer. The area of the parish is 6000 acres; the population, in 1831, was 1418, from one-third to one-half agricultural. Aldbourne had formerly a market and fair, but they have been discontinued: a small manufacture of hustings was carried on for a few years, but if it now exists it is much reduced. Steeple Ashton is in Whorwell-land, about three miles east of Trowbridge, a former market town, and in which the land's time was the seat of a considerable clothing manufacture. It has a lofty and elegant church, with nave, chancel, side aisles, north and south porches, two small chapels, and a large western tower. Both church and tower were built by Battlements and pinnacles. The tower has a fine western window and was antiently surmounted by a stone spire, or, as Leland calls it, a 'spirel of Steeple Ashton;' which gave to the village its distinguishing epithet of Steeple Ashton. The spire was destroyed in two thunderstorms of July and October 1611, together with the lead from pavement, differing from the usual style and materials of Roman pavement, was dug up at Steeple Ashton. The area of the parish is 7460 acres: it is divided into five chaplaries or tythings. The population of the tything of Steeple Ashton, in 1631, was 949; of the whole parish, 1851, Box is in the hundred of Chippenham, about five miles east of Bath, in a beautiful valley watered by a small stream called the Leach. The number of inhabitants is about 7000. There are considerable quarries near Box, of the freestone usually called Bath stone, and there are two mineral springs. The area of the parish is 4140 acres; the population, in 1851, was 1560. Some men were employed in stone quarries or on the roads. The Great Western railway passes near Box, and the longest tunnel on the line is near this place. North Bradley is in the hundred of Whorwell-land, two miles south of Trowbridge. The parish consists of an ancient park of which there is an ancient house called North Bradley Court. The old house of North Bradley Court is a large and handsome building, formerly held by the Earls of North-Bradley, and now a farm; the population of North Bradley, in 1831, was 152; that of the rest of the parish, including the village of North Bradley, 1025; together, 2147, about one-fourth agricultural. The manufacture of broad cloth and knee-breeches is carried on in this parish. The parish is in the hundred of Bath, the Baptist church was built in 1831 to 91 men. Bratton is just at the foot of the north-west escarpment of the southern or Salisbury Plain chalk district in Westbury hundred. It is a hamlet of Westbury, from which it is distant 40 or three miles north-east. Bratton camp is an ancient entrenchment of irregular form, nearly a mile in circuit, and enclosing an area of twenty-three acres, on the edge of the chalk downs between the village and the town of Westbury. On the south-eastern escarpment, near the camp, is a tumulus supposed to be a memorial of Alfred's victory at Eddington, but which is positively asserted by others to be of modern date. Bromham or Breham is in the hundred of Poterne and Cannings, four miles north-west from Devizes. The town of Bromham consists of three villages: the church of St. James in Bishop's-Cannings, a large village, included in the new boundary of the borough. The population of the parish, in 1831, was 1330. The village of Bishop's Cannings is in the valley beneath the southern escarpment of the northern chalk district, to the left of the road from Marlborough and Devizes to Coggeshall; is a handsome church, with nave and side aisles, transept, south porch, a chantry altar at the east side of the transept, another chantry chapel, and a lady chapel, now used as the chancel. Some parts of the old church are Early English, and the battlements and some windows in the nave are of a later period: the tower and spire rise from the intersection of the nave and transept, and are of Early English character. Corsham, formerly a market-town, is in the hundred of Chippenham, about three miles west-south-west of Chippenham. The parish has an area of 6710 acres; the population, in 1831, was 2994, nearly one-half agricultural. The village is in a healthy situation and consists of a long street, with the houses built of stone with a market-house in the centre, built A.D. 1784, by Mr. Methuen, with the vain expectation of reviving the market. The church is a large antient building, lying back from the church, close to Corsham Park, the seat of Lord Methuen, the present owner of the manor of Corsham. Corsham House is building of the age of Elizabeth of very incongruous architecture: it contains a very fine collection of paintings, formed by Sir Paul Methuen, as a gentleman diplomatist, early in the last century. Sir Richard Blackmore, the poet, was a native of Corsham. Long-
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Deverfaill or Deverill is in the southern division of

Damerham

hundred. It is called Longbridge Deverhill to
distinguish it from four other villages to which the name of
Deverhill is common, all lying within about three miles
south of Longbridge Deverhill, and one of them, Hill Deverhill. immediately adjacent to it. Longbridge Deverill
parish has an area of 4230 acres ; the population, in 1831,
was 1307, more than a third agricultural : the clothing
manufacture employed above fifty men.
Dilton is a
suburb of Westbury, of which parish it is a chapelry. The
chapel is about a mile from Westbury : the population of
the chapelry, in 1831, was 2172, of whom 200 men were
employed in manufacture chiefly or wholly of woollen
cloth and kerseymere. Hilperton is little more than a
mile north-east of Trowbridge ; it shares in the cloth and
kerseymere manufacture of that town, which gave employment to 85 men in Hilperton parish in 1831. The area of
the parish is 980 acres ; the population, in 1831, was 1067.
Kingswood is in a portion of Chippenham hundred insulated in Gloucestershire, about a mile south by west of
Wootton-under-Edge. There was formerly a Cistertian
abbey here, founded a.d. 1139: it was almost forsaken
toon afterwards by the removal of the monks to Haselden,
and afterwards to Tetbury, Kingswood becoming a cell
with only a monk or two to say mass ; but about a.d. 1170
the abbot 'and monks returned to a place called Mere wood,
in Kingswood parish, where the village now is, near the
site of their former seat.
The revenues of the abbey at
the dissolution were estimated at 254/. lit. 2d. gross, or
244/. 11#. 2d. clear, according to Speed andDugdale. The
statement of a MS. Valor, quoted by Tanner, differs a little
from this account. Part of the conventual buildings, consisting of the gate-house of the abbey and a range of buildings on each side, lately occupied as separate dwellings,
but now in ruins, are still standing. The area of Kingswood parish is 2320 acres; the population, in 1831, was
1447. of whom 123 men were employed in the woollen
eloth manufacture.
East Knoyle. in Downton hundred,
about two miles south-west of Hindon (area of parish
5320 acres ; population, in 1831, 1028, chiefly agricultural)
wis the birthplace of Sir Christopher Wren, whose father
was rector of the parish. Ramsbury is in Ramsbury hundred,
miles north-west from Hungerford. It was made
tbe seat of the bishopric erected in the ninth or tenth
century by the dismemberment of Wiltshire from the
diocese of Sherborne ; the see was removed after an interval to Wilton, but at what period is doubtful ; and was
afterwards reunited to Sherborne, the cathedral being
fixed at Old Strum, from which it was removed to
Salisbury.
The area of the whole parish, which is divided
into three tything*, is 9960 acres ; the population, in 1831,
was 2290, of which the town tything contained 1538. The
church is spacious, and consists of a nave and two aisles,
» chancel, and a massive western tower. Ramsbury manor
»od house belong to Sir Francis Burdett. Sheraton Magna,
or Great Sherston, is in Chippenham hundred, about six
miles west of Malmesbury.
The area of the parish is 4140
teres ; the population, in 1831, was 1361, principally agricultural.
Sherston is thought by some to be the Sceorttane of the Saxon Chronicle, the scene of an indecisive
battle (aj>. 1016; between Edmund II. (Ironside) and
Canute, who engaged during the battle in personal conflict.
The village is partly within the site of an antient
encampment, part of which is obliterated. There is a
local tradition of a conflict between the Saxons and Danes,
ia which the Saxons were commanded by a warrior called
Rattlebone.' of whom a gigantic figure is seen on the sign
of an inn.
Rattlebone is thought to be a popular traditional
name of Edmund II. The church at Sherston is a very
large cross church, comprehending a nave, two aisles,
transept, and large south porch.
Ft is of various dates,
partly Norman, partly later.
South wick (population, in
1831, 1452) is a tything of North Bradley in Whorwekdown hundred, two miles south-south-west of Trowbridge.
The cloth manufacture employed, in 1831, 113 men.
Wiasley and Limpley-stoke are chapelries in the parish
ind hundred of Bradford; Winsley about a mile, and
Umpley-ttoke about two mile* west of that town. The
population of the two chapelries, in 1831, was 2847 ; the
doth manufacture gave employment to 245 men.
Division* for Ecclesiastical and Legal Purposes. The
county was formerly included in the diocese of Salisbury,
tnd was divided into the two archdeaconries of Sahsbwy

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and Wilts. The archdeaconry of Salisbury comprehended
the five rural deaneries of— (1) Amesbury, (2> Chalke or
Chalk. (3) Pottern, (4) Wilton, (5) Wylie or Wylye ; beside the deanery of Salisbury, which consists of the three
parishes of that city
the archdeaconry of Wilts comprehended the four rural deaneries of— (1 ) Avebury, (2) Cncklade, (3) Malmesbury, (4) Marlborough. By the late alterations, in pursuance of the recommendation of the Church
Commissioners, the rural deaneries of Cricklade and
Malmesbury have been transferred to the archdeaconry of
Bristol, in the diocese of Bristol and Gloucester ; and the
rural deanery of Pottern has been transferred from the
archdeaconry of Salisbury to that of Wilts. The total
number of ecclesiastical charges in the county is, as near as
we can ascertain, 336; but as some of these are permanently united, the number of benefices is only 273. Hie
ecclesiastical charges and benefices are arranged as follows :
I. Diocese of Salisbury.
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Arehdeaeonry of Salisbury.

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Archdeaconry qf IVtlts.
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Avebury . 12
Marlborough 13
Pottern

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Diocese or Gloucester and Bristol.
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Archdeaconry of Bristol.
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Wiltshire is in the western circuit : the spring assizes are
held at Salisbury, tbe summer assizes at Devizes. The
judges proceed to those places from Winchester ; and go
from them to Dorchester. The Epiphany and Easter quarter sessions for the county are held at Salisbury ; the midsummer sessions at Warminster, and the Michaelmas sessions at Devizes.

At the commencement of the year 1836

there were four
one, a county gaol, at
Fisherton Anger, a suburb of Salisbury; two at Devizes,
the old bridewell and the new house of correction ; and
one. a bridewell, at Marlborough. But since that time the
old bridewell at Devizes has been given up. The county
gaol at Fisherton Anger contains 112 sleeping cells and 5
dark cells ; with 10 day-yards, all gravelled and partially
paved. Each prisoner eats and sleeps in a separate cell,
and only four or five are allowed to be in the yard together.
The prison is not made so useful as it might be ; as many
as 50 cells have been empty at one time, and that
prisons belonging to the county

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while the prisons at Devizes and Marlborough were full to
overflowing. The majority of the inmates are prisoners
for trial.
The prison is neat and clean and well arranged
it is so built that every sound is heard, even a whisper lias
been said to have been heard at night. The labour is very
light.
The house of correction at Devizes contains 235
sleeping cells, 38 of which are for women ; an addition of 40
There are ten wards or di vicells has been lately made.
sions (or men, and a separate building for women. D»Jrooms for the men are almost disused ; the women l»» ve *
day-room, a laundry, and an infirmary ; there »
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school-room. Most of the prisoners »!<;*p in **-j*r*
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silent system is enforced on all. Vti">ma*
placed in a yard during the day, two or /our U^V^.[
convicted prisoners arc allowed to \kc w v* T*^r
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without restraint; but the convicted are kept, as far as possible, in separate cells. There is no regular labour for the men: the women sometimes wash and mend the clothes. The arrangements of the prison are in several respects defective; but it is kept neat and clean, and the keeper appears to perform his office, amid many difficulties, in a methodical and careful manner. (Inspectors of Prisons' Second, Fourth, and Seventh Reports.)

Before the Reform Act thirty-four members of parliament were returned from Wilts; namely, two for the county, two for the city of Salisbury, and two each for the boroughs of Great Bedwin, Calne, Chippenham, Cricklade, Downton, Heytesbury, Hindon, Loderslack, Malmesbury, Marlborough, Old Sarum, Westbury, Wilton, and Wotton-Basset. By the Reform Act, Great Bedwin, Downton, Heytesbury, Hindon, Loderslack, Old Sarum, and Wotton-Basset were altogether disfranchised; and Calne, Malmesbury, Westbury, and Wilton reduced to one member each. The county was formed into two divisions, each returning two members; so that the number of members is now eighteen, returned as follows:

<table>
<thead>
<tr>
<th>Members</th>
<th>1832-36.</th>
<th>1839-40.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiltshire, northern division</td>
<td>2</td>
<td>5059</td>
</tr>
<tr>
<td>Ditto, southern do.</td>
<td>2</td>
<td>3059</td>
</tr>
<tr>
<td>Calne</td>
<td>1</td>
<td>179</td>
</tr>
<tr>
<td>Chippenham</td>
<td>2</td>
<td>228</td>
</tr>
<tr>
<td>Cricklade</td>
<td>2</td>
<td>1761</td>
</tr>
<tr>
<td>Devizes</td>
<td>2</td>
<td>345</td>
</tr>
<tr>
<td>Malmesbury (South)</td>
<td>2</td>
<td>228</td>
</tr>
<tr>
<td>Marlborough</td>
<td>2</td>
<td>263</td>
</tr>
<tr>
<td>Salisbury</td>
<td>2</td>
<td>721</td>
</tr>
<tr>
<td>Westbury</td>
<td>1</td>
<td>211</td>
</tr>
<tr>
<td>Wilton</td>
<td>1</td>
<td>228</td>
</tr>
</tbody>
</table>

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The northern division of the county comprehends the hundreds of Bradford, Calne, Chippenham, Damerham (North), Highworth, Cricklade, and Staple, Kingsbridge, Melksham, Malmesbury, Melksham, Potters and Cannings, Ramsbury, and South Cerney. By the court of election is held at Devizes; and the polling places are Devizes, Melksham, Malmesbury, and Swindon.

The southern division comprehends the hundreds of Alderbury, Amesbury, Branch and Dole, Cawden and Cadworth, Chalke, Damerham (South), Downton, Duncombe, Elstub and Everly, Frutfield, Heytesbury, Kinwardstone, Mere, Underditch, Warminster, and Westbury. The court of election is held at Salisbury; and the polling places are Salisbury, Devizes, Everly, Hindon, Street, and Warminster.

The detached portions of the county were by the Boundary Act added to the counties in which they are respectively insulated.

In consequence of the bribery proved to exist in the borough of Cricklade, the elective franchise of that borough was extended (a.d. 1792) to the freeholders of the hundreds of Highworth, Cricklade, and Staple, Kingsbridge, and Melksham. With the exception of Cricklade, all the boroughs in the county were enlarged by the Boundary Act, some of them very considerably, by the addition of a number of rural parishes. This was especially the case with Malmesbury and Wilton. By the Municipal Reform Act, the extended parliamentary boundaries of Devizes and Salisbury were adopted for municipal purposes.

History and Antiquities.—Wilts is probably the richest, of all the English counties, in memorials of the earliest historic period, and indeed of the ant-historic period of our country. This pre-eminence it owes to the wide extent of the chalk district, in which the earth which the chalk containing, was untouched by the plough, on which the earth or rude stone memorials of the remotest ages have remained uninjured, except by the mouldering touch of time, or by rare and occasional interventions of the caprice and violence of man; exempt in a great degree from the more systematic and complete destruction which the extension of building or cultivation has caused.

It is difficult to determine exactly to which of the ancient Britons the various parts of the county belonged.

A large portion, there can be no doubt, belonged to that nation or those nations who are mentioned by Ptolemy under the generic name of Belgae (Belg.i). Ptolemy assigns to them the cities of Iscalesia (Twyford) and Aquis Calidiae (Wyse Thera), now Hillesdon and Bath in Somersetsire, on the one hand, and Venta 'Glaston,' now Winchester in Hampshire, on the other. We may therefore assume that the inhabitants of the part of the country which lies between these places. Possibly some parts of the south-western border, about Mere and Hindon, may have belonged to the Durtrigores (Durtrigores, T polyem), who occupied Dorsetshire; and some parts in the north-east side of the county probably belonged to the Atrebates (A terbates, Ptolemy), whose chief town was Calleva (Camelot, Ptolemy), now Silchester, on the border of Berkshire and Hampshire. It is not unlikely that the upper Thames, which may be assigned to the Dobuni (Duoboni, Ptolemy), whose chief town was Calleva (Aquitania, Ptolemy), now Silchester, and Corinium (Corinium, Ptolemy), now Cirencester.

By Richard of Cirencester the towns of Iscalesia and Aquis Calidiae, or, as he terms them, Thermes, or Aquis Solia (probably an error for Sulia), were assigned to the Vedones, or Vedones, to the Hedoni; in which case it is not unlikely that the western part of the county of Wilts may have belonged to that people. But it is to be observed that Richard appears to be at issue in this matter with Ptolemy, who, as we have seen, assigns them to the Belgae. The Celtic origin of the Hedoni (supposing them to be of the same race as the Gallic nation so called) makes it difficult to suppose that they are included by Ptolemy under the name Belgae. Yet a passage in Richard indicates that the name of Belga was a term applied to a race of people: "For all the Belgae were Allobroges, and derived their origin from the Celtae and Belgae." In the revised Richard's book published in 1809, Allobroges is interpreted to mean "foreigners," which is no more than an error of the original. It is however possible that the name of Belgae may have been given by Ptolemy to a great confederation of which the predominant tribes were of Belgae race; and that the Hedoni, so powerful in Gaul in British History, a subordinate member of that same confederation. Richard assigns to the Segontii a position near the river Cunetium (or Kennet) and a city called Vinoundum, which he elsewhere enumerates among the trubary and less important cities (civitates superstitionis); but from various other monuments the name and map appear to place the Segonti in part in Wilts.

It is likely that the county was included in the scene of Vespasian operations in the reign of Claudius, when he subdued two very powerful nations (of whom Richard of Cirencester states that his son, Natan-leod, was one), conquered the Isle of Wight, and sided in reducing the southern part of Britain into the form of a province. (Suetonius, Vespasianus, c. 4.) In the Roman division of the province Wilts was included in the province of Britannia Prima.

After the departure of the Romans, Wilts was the scene of contest between the Britons and the Saxons. The scene of the asserted massacre of the British nobles by Hengist and his brother Aelle is placed in the county of Wilts (see History and Antiquities), and its locality are doubtful. The great victory which Cerdic, founder of the kingdom of Wessex, obtained (A.D. 586) over the British king Natan-leod or Nazaleod, brought the conquerors to the south-eastern border. Cerdic, the Cerid's ford of the Saxons Chronicle, was on the Avon, above Fordingbridge, in Hampshire, but close to the Wiltshire border, was the limit of the territory 'Natan-leaghe' (a name which seems to be preserved by Nettle Abbey, in Hampshire), to which Natan-leod gave Cerdic. It does not appear to have been an island or subdumb Wilts then. The Saxons Chronicle is silent about him for many years; and when he is next noticed (A.D. 519) it is on occasion of a victory gained by him and his son Cynegils at Cerneford near Cerne Abbas above mentioned. Then it may be doubted if much of Wilts was subdued for many years afterwards (A.D. 583) we find Cynric, son of Cerdic, in successful conflict with the Britons at Sandrig or Old Sarum. The West Saxons, of whose kingdom the Saxons Chronicle speaks, made an unsuccessful attempt to extend their power northward, to and even beyond the Thanes, rather than westward. However, before or in A.D. 577, they must have overrun Wilts, as we find in that year, under their king Cynric, that the Britons in the north of Sommergehe and in Gloucestershire, to which they must have crossed Wilts. Whether they suffered any repulse, or the Britons retaliated their invasion, is not clear; but in A.D. 591, according to the Saxon Chronicle, there was a great
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bourn—St. George to the station at Folly Farm, near Marlborough, coinciding with modern roads or lanes. From Marlborough, may be traced, running south-westward by a built avenue across Savernake Forest and the grounds of Savernake House and Tottenham Park, by Crofton, Wilton, Marton, and through Conhol Park into Hampshire, at Hampshire Gate, and so to Venta Belgarum or Winchester. Just before quitting Wilshire it makes a sudden bend, very unusual in Roman roads, to avoid a declivity.

The Roman road, known in later times as the Port Way, from Calleva (Silchester) to Sorbiodunum (Old Sarum), entered at Hampton-Common, near Newbury, and runs by Porton and Winterburn-Gunner.

Another road, coming apparently from Spinae (Spina near Newbury), is traceable just on the border of the county near Tidcombe, 4 miles north-east of Luddington, running in the direction of Sorbiodunum.

There are some traces of a Roman road from Folly Farm by Marlborough, running due south in the direction of Sorbiodunum or Old Sarum. Possibly the road from Spinae has not noticed unite by a

Another road is supposed to have run in a north-west direction from Sorbiodunum toward Aque Sulis, now Bath: but this is not certain.

A road from Sorbiodunum leading westward may be traced from Newbury Plain, through Greaveley Wood, by Dinton-Beeches, through Stockton Wood and the Great Ridge Wood, towards Monkton Deverhill, and Kingston Deverhill, and thence by Maiden Bradley into Somerset. It is apparently part of the road which runs through Somersetshire along the Mendip Hills towards the Bristol Channel.

Of the station Cunetio traces are found both at Mildenhall on the north side of the Kennet, and Folly Farm on the south side, and Sir R. C. Hoare distinguishes the two positions by the names of Upper Cunetio (Folly Farm) and Lower Cunetio (Mildenhall). The hill on which Folly Farm stands is covered with a variety of banks and earthworks, probably belonging to the period before the Roman domination, and it is probable that some of the earthworks are part of the Roman settlement. A portion of the rampart, which was quadrangular with rounded angles, may be seen, and in the cemetery remains, coarse tessellated pavements, medallions, and other relics have been dug up. The most remarkable of these relics was a small-boned figure of a female dressing her hair, and a bronze spoon. At Mildenhall are some traces of the rampart. It is not improbable that the town of Cunetio occupied both banks of the river, and that the two forts were for its defence, one on the north, the other on the south.

At Wanborough-Nyth and Covenham farms, where the road to Cunetio branches off from that between Durocormium (Cirencester) and Spinae (Spina), are traces of a Roman settlement; abundance of fine red glazed and thin pink pottery, and some of coarse manufacture, has been found, and inequalities in the surface of the ground, from which many large stones have been dug up, are indications of ancient buildings. Sir R. C. Hoare, without any authority, that we are aware of, that the modern name Nyth, has named this station Nidum.

The Roman settlement at Easton-Grey on the Fosse appears, from the traces of buildings, to have been of some extent, Sir R. C. Hoare identifies it, on slender grounds, with the station of Hastingley, near Ransome, and the site of any vallum, but numerous medals and a coarsely sculptured bas-relief have been found.

At Stockton Wood Corner, 104 miles from Sorbiodunum (Old Sarum), on the road which leads into Somersetshire by Aylesbury, 1½ miles north-west, is the remains of a Roman settlement; pottery and medals having been dug up. At Bishopstrow, between Warminster and Heytesbury, on the line of the supposed road from Sorbiodunum (Old Sarum) to Aque Sulis (Bath), the remains of a Roman settlement by a bank and ditch, an earthen rectangular quadrangular area of 50 acres, still called the Bury: large fragments of Roman pottery have been dug up in every part of the enclosure. At Plimead, close to Bury, are the remains of a Roman road, near the site of the station Verulanium; and at Littlecote, near Ransome, tessellated pavements have been discovered, but the principal of them were destroyed soon after they were found. At Rudge a brass cup and some medals were found in a well; the cup was inscribed with the names of several of the stations on the Roman wall in Northum-

Of the antiquities, not Roman, the most striking are those of Stonehenge and Avebury or Abury. [Stoneshenge; Avebury.] There are some traces of a British or track-way, known as the Ridge-way, running across Salisbury Plain, near Newbury, down to the town of Newbury, and near Marlborough, passing through the county of Berkshire; throughout which county it may still be traced.

Wansdyke, or Wansditch, is a vast earthen rampart, with a ditch on the north side, which extends, though not uniformly, through the country for the first undistinguishable part. Of Wansdyke, westward, is at Maes Knoll Camp, about five miles south-south-east of Bristol. It may have been traced at intervals in Somersetshire, by Stanford Camp, to the neighbourhood of Bath, where a small part of it may be still discernible, near the Warmminster and Shrubb ford, a part extending across Claverton Down to Bathampton Camp. From thence its direction is doubtful; it is supposed to have coincided, for many miles, with the line of the Roman road from Aque Sulis to Cunetio. At Warminster's Hill, three or four miles north of Wiltbridge, it again appears, diverging from the course of the Roman road, and running across the chalk downs of the northern chalk district, not far from its southern extremity, which one its said to have been the cause of the ravine through which the river Wilt passes, where it suddenly bends to the south-south-east; it afterwards turns more to the east, and enters Berkshire. Its length, in Wiltshire, from its divergence from the Roman road to the Berkshire border, is about 10 miles including gaps. The origin of Wansdyke is unknown. The old popular tradition, which was evidently connected with its name, was, that it was made by the devil on a Wednesday. Aubrey supposed it to have been the ancient boundary of the kingdoms of Wessex and Mercia, which once it was considered as.

Stokesy supposed it to have been made by the Belgae, to secure their territories from the Celtae. Sir R. C. Hoare seems to have regarded it as a Welsh work, repaired or reconstructed by the Saxons.

The surrounding numerous banks and ditches are to be traced on the downs; some probably for defence, like Wansdyke, with one rampart and a ditch: others are supposed to have been roads, and consist of a broad level way between two banks. Old-ditch may be traced on the downs, north of Warminster and Heytesbury, running eastward by Chittern, or Chiltern, and Chiltern, and on to Bath. It terminates in another ditch running at right angles to it; its length is about 11 miles, including gaps and intervals. There are no remains of the ditches which may be traced for above two miles. Grimsditch, consisting of a bank and ditch, and Bokerly-ditch, also consisting of a bank and ditch, separating at its south-eastern end into two branches, are on the downs south of Salisbury, the former being part of a British fort, the latter a short distance, the boundary of the two counties. The length of Grimsditch is about six miles; of Bokerly-ditch, including both branches, about six miles, including gaps or intervals. Both have a very winding course.

The Roman enclosures are very numerous; they are fully described in Sir R. C. Hoare's 'Antiquities of Wiltshire,' which has been our chief authority for the antiquities of the county.

In the year 1164, in the second of Edward I., a national council was held at Clarendon, two miles south-east of Salisbury, where the kings had a residence and a forest: at this council the constitutions of Clarendon were passed, restricting the power of the clergy. In the reign of...
Henry III., A.D. 1267, the statutes for the suppression of tumults, known as 'the statutes of Marlidge,' were enacted in an assembly, or council, held at Marlborough. In the War of the Roses, the men of Wiltshire generally embraced the Lancastrian side; but no great event in that war occurred in the county. The civil war of Charles I., Marlborough, which was garrisoned by the parliamentarians, was taken, with the governor and officers, and 1000 prisoners, and four pieces of cannon, by the royalists under Wilmot, A.D. 1642. In 1643 a body of royalist infantry was besieged in Devizes by Sir William Waller, but the siege was raised, and Waler defeated (13th July) on Roundway Hill, by Wilmot. Other actions of less importance were fought at Malmesbury and Ludgershall; and Wardour castle and Warminster town were beset 1704 and taken. During the time of Marlborough Wiltshire was the scene of the unsuccessful attempt of the royalists under Sir Joseph Wagstaffe. [SALISBURY.]

(Ordinance Map of England; Greenough's Geological Map of England; Conybear and Phillips' Outlines of the Geography of England and Wales; Britain's Beauties of Wiltshire; Priestley's History of Canals and Navigable Rivers; Sir R. C. Hoare's Antient Wiltshire and Modern Wiltshire; Ptolemaus Geography; Antonii Fabricii Rerum Britannicarum Historia; Salvin Chronicle; Parliamentary Papers.)

STATISTICS.

Population and Occupations.—As an agricultural county, Wiltshire was the tenth in rank in 1831, standing between Suffolk and Oxfordshire. The proportion of the agricultural population was 48.5 per cent. in 1831, at which period there were 3387 occupiers of land employing labourers, 1293 occupiers not employing labourers, and the number of agricultural labourers was 24,708. The remainder of the male population, aged 20 and upwards, was distributed as follows:—3407 employed in manufactures; 13,069 in retail trades and handicrafts; 1722 capitalists, bankers, and members of the professions; 4826 non-agricultural labourers; 1679 domestic servants; other males aged 20 and upwards, 4338; and there were 7625 female servants. The following details refer to 1831, the Return of Occupations in 1841 not being yet published. The manufacture of fine brocadel and of kerseymere employs more than 1000 men at Towcester. 600 at Bradford, 200 in the parish of Westbury, 170 at Melksham, 170 at Kingswood, 170 at North Bradley with Southwick, 85 at Hilperton, 65 at Chippenham, 62 at Bromham, 52 at Longridge, 35 at Heytesbury, 35 at Calne, 35 in the parish of More, and a few in various other places, and the total number throughout the county exceeds 3000. At Wilton about 40 men are employed in making carpets, and a few at Burcombe. A small manufactory of horsehair exists at Britford.

On the supposition that the registered baptisms, marriages, and deaths, bore the same proportion to the actual population as in 1801, the population of Wilt, in the undermentioned years, would be as follows:—95,801 in 1570, 119,672 in 1600; 146,799 in 1630; 128,969 in 1670; 159,072 in 1700; 177,089 in 1750. The population actually enumerated at the following decennial periods was as under:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Increase per cent.</th>
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</thead>
<tbody>
<tr>
<td>1601</td>
<td>87,590</td>
<td>77,477</td>
<td>165,067</td>
<td>183,107</td>
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<tr>
<td>1611</td>
<td>91,560</td>
<td>102,268</td>
<td>193,828</td>
<td>5</td>
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<tr>
<td>1621</td>
<td>106,213</td>
<td>113,944</td>
<td>220,157</td>
<td>15</td>
</tr>
<tr>
<td>1631</td>
<td>117,622</td>
<td>122,554</td>
<td>240,176</td>
<td>9</td>
</tr>
<tr>
<td>1641</td>
<td>129,240</td>
<td>130,493</td>
<td>259,733</td>
<td>7.7</td>
</tr>
</tbody>
</table>

From 1801 to 1841 the population increased 73,626, or 49.7 per cent. In the three years ending June 1841, the proportion of marriages to the population was 1 in 150; births, 1 in 34; deaths, 1 in 50; the proportion for England being respectively 127, 31, and 45. In the same three years, the proportion of persons under 21 years of age, was 16.8 for women, and 8.2 for men; and in England and Wales 13.78 for women, and 4.69 for men (Fourth Report of Registrar-General). It appears from the Census Returns of 1841, that 223,395 persons, or 88.3 per cent. of the population, were born in the county; 27,570 persons, or 10.7 per cent., in other counties of England and Wales; 281 persons, or 0.1 per cent., in Scotland; 605 persons, or 0.6 per cent. in Ireland; 7 persons were born in the colonies; 169 were foreigners, and 127 British subjects born abroad. The place of birth of 1713 persons was not ascertained. According to this Census the number of persons to a square mile is 190. The population, &c. of each hundred and borough in 1841 is shown in the following table:—

<table>
<thead>
<tr>
<th>AREA</th>
<th>PERSONS</th>
<th>PERSONS BORN</th>
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<tr>
<td></td>
<td>UNDER 20 YEARS</td>
<td>20 AND UPWARDS</td>
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<tr>
<td></td>
<td>MALES</td>
<td>FEMALES</td>
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<tr>
<td>Alderbury</td>
<td>6,190</td>
<td>5,669</td>
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<tr>
<td>Andover</td>
<td>11,150</td>
<td>9,725</td>
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<tr>
<td>Bradford</td>
<td>13,490</td>
<td>11,875</td>
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<tr>
<td>Calne</td>
<td>6,500</td>
<td>5,624</td>
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<tr>
<td>Chippenham</td>
<td>11,100</td>
<td>9,624</td>
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<tr>
<td>Craven</td>
<td>10,100</td>
<td>8,575</td>
</tr>
<tr>
<td>Devizes</td>
<td>7,600</td>
<td>6,624</td>
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<tr>
<td>Dursley</td>
<td>8,100</td>
<td>6,745</td>
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<tr>
<td>Faringdon</td>
<td>7,000</td>
<td>5,875</td>
</tr>
<tr>
<td>Malmesbury</td>
<td>12,600</td>
<td>10,875</td>
</tr>
<tr>
<td>Marlborough</td>
<td>11,000</td>
<td>9,575</td>
</tr>
<tr>
<td>Melksham</td>
<td>7,000</td>
<td>5,624</td>
</tr>
<tr>
<td>Melksham (Wiltshire)</td>
<td>7,000</td>
<td>5,624</td>
</tr>
<tr>
<td>Marlborough</td>
<td>11,000</td>
<td>9,575</td>
</tr>
<tr>
<td>Newbury (Salisbury)</td>
<td>7,000</td>
<td>5,624</td>
</tr>
<tr>
<td>Totals</td>
<td>128,240</td>
<td>118,493</td>
</tr>
</tbody>
</table>

P.C. No. 1734.

VOL. XXVII.—S. 5 K
In 1831 the number of inhabited houses was 46,281, occupied by 111,560 families, and there were 321 houses building, and 1897 unbuilt.

**County Expenses, Crime, &c.**—Sums expended for the relief of the poor: 1748-49-50 (annual average), 22,938£; 1775, 54,022£; 1783-84-85 (average), 62,683£. The sum expended in 1811 was 128,625£, being 13£. 10s. for each inhabitant.

1811...234,352£     24 2
1821...163,168£     14 8
1831...191,022£     16 4
1841...133,573£     10 2

In each of the following years ending 25th March, the expenditure for the relief of the poor was as under:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Population in</th>
<th>Out-relief</th>
<th>Establishment and Salaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1829</td>
<td>13,577</td>
<td>1125£</td>
<td>10,734£</td>
</tr>
<tr>
<td>1830</td>
<td>13,577</td>
<td>1125£</td>
<td>10,734£</td>
</tr>
<tr>
<td>1831</td>
<td>13,577</td>
<td>1125£</td>
<td>10,734£</td>
</tr>
<tr>
<td>1832</td>
<td>13,577</td>
<td>1125£</td>
<td>10,734£</td>
</tr>
<tr>
<td>1833</td>
<td>13,577</td>
<td>1125£</td>
<td>10,734£</td>
</tr>
</tbody>
</table>

The number of persons relieved in these unions during the quarter ending Lady-day, 1830, was 28,136 (5069 in-door, and 24,598 out-door). In the quarters ending Lady-day, 1840, 1841, and 1842, the numbers were as follows:—

In 1840—in-door, 4009£; out-door, 25,945£; total, 30,609£; in 1841—in-door, 19,509£; out-door, 25,482£; total, 30,091£; in 1842—in-door, 5,457£; out-door, 18,270£; total, 23,727£.

The proportion in 1841 of the total number of paupers to the total population was 15 per cent, while the average for England in the same year was 9 per cent, and in no other county was the proportion so high as in Wilts. The expense for in-maintenance and out-relief was 100,142£ for the year ending Lady-day, 1842, being an increase of 4 per cent. on the preceding year. The number of adult able-bodied paupers relieved in the quarter of 1841 was 79,422£. The number of paupers charged with criminal offences in the septennial periods ending 1819, 1826, 1833, and 1842.

In 1839 the church-rates amounted to £63,894; and 141£, applicable to the same objects, were derived from other sources, the amount was £75,693 for parish churches, and £7,369 for parochial and charitable purposes.

The number of turnpike trusts in 1840, was 2; the income from tolls was £35,363£; parish poor-rates amounted to 12,902£; and the total expenditure for the same year being £26,029£.

The bond and mortgage debts amounted to £17,760£. In 1836 the debt was equal to 3½ years' income; for the whole of England the proportion of debt to income was not above 4½ years: the proportion of unpaid interest to the total debt was 13 per cent; in England 12 per cent. In ten trusts there was a surplus revenue in 1841, which, if applied to discharge the debts of each, would pay off their head-pieces debts in periods varying from twenty-two years; in two cases in twenty-one years, and in one twenty-one years.

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property committed with violence; 433 (including 332 cases of simple larceny) with offences against property committed without violence; 4 with malicious offences against property; 5 for forgery, coinage, and uttering base coin, and 18 for various misdemeanours. Of 394 persons convicted, 2, against whom sentence of death was recorded, were transported for life; 14 other offenders were also transported for periods above ten and under fifteen years; 30 for periods above seven and not exceeding ten years; and 23 for terms of seven years, making 53 transported. None were sentenced to imprisonment for periods exceeding two years; 2 were imprisoned for a period not exceeding two years; 31 for periods exceeding six months and not exceeding one year; and 277 for six months and under; and 2 were whipped: 1 received a free pardon. Of the 154 persons acquitted, 107 were found not guilty on trial; in the remaining 47 no bill was found; and in 8 instances there was no prosecution. Nearly one-half (275) of the total number of persons committed were between the ages of 10 and 22; or one-fourth (138) between 15 and 20, and one-fourth (157) between 20 and 25, which are higher proportions for these ages than the rest of England and Wales. The degree of instruction was ascertained in all but six cases: 117 males and 10 females could neither read nor write; 349 males and 45 females could read and write imperfectly; 14 males and 1 female could read and write well; 1 male and 1 female had received a superficial education. The proportion of uninstructed criminals on the county on an average of several years was 91 per cent.; in England and Wales 89.3 per cent.

Savings Banks.—There are eleven of these institutions in the county, and the number of depositors in 1841 was about 1 in 26 of the total population; but while the average amount invested by depositors in England was 52½ each, it was 36.6 in Wills, and as the proportion of depositors under 20 is only 1 in 30 (in England 1 in 37), the inference is that few of the labouring classes are above the average themselves of the savings-banks. The number of depositors and amount of deposits in each of the following years were as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Depositors</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>1,086</td>
<td>3,923</td>
</tr>
<tr>
<td>1834</td>
<td>1,352</td>
<td>4,565</td>
</tr>
<tr>
<td>1840</td>
<td>1,337</td>
<td>4,211</td>
</tr>
<tr>
<td>1846</td>
<td>1,424</td>
<td>4,548</td>
</tr>
</tbody>
</table>

The distribution of the sums invested in 1830, 1834, and 1840 is shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Not exceeding 10</th>
<th>10 to 35</th>
<th>35 to 65</th>
<th>65 to 120</th>
<th>Above 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>50</td>
<td>320</td>
<td>240</td>
<td>100</td>
<td>40</td>
</tr>
<tr>
<td>1834</td>
<td>50</td>
<td>300</td>
<td>250</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>1840</td>
<td>50</td>
<td>310</td>
<td>260</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

The deposits of 96 friendly societies, not reckoned above, amounted, in 1840, to 12,0911; and 5077 were invested by 133 charitable institutions.

Elective Franchise.—The actual number of county voters registered, in 1835, was 5002 in the northern division, and 3044 in the southern division; and in 1839-40 the numbers registered were as under:

<table>
<thead>
<tr>
<th>District</th>
<th>N. div.</th>
<th>S. div.</th>
<th>Total 1835-6</th>
<th>Total 1839-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiltshire</td>
<td>1705</td>
<td>1705</td>
<td>3410</td>
<td>3410</td>
</tr>
</tbody>
</table>

Education.—Summary of Returns made to Parliament in 1833—

<table>
<thead>
<tr>
<th>Schools</th>
<th>Scholars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant-schools</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Number of infants at such schools; ages from 2 to 7 years:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>436</td>
<td>436</td>
</tr>
<tr>
<td>Females</td>
<td>451</td>
<td>451</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>797</td>
<td>797</td>
</tr>
</tbody>
</table>

The schools established by Dissenters, included in the above table, are:

<table>
<thead>
<tr>
<th>Schools</th>
<th>Scholars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant-schools</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>142</td>
<td>142</td>
</tr>
<tr>
<td>The schools established since 1818 are:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant and other daily schools</td>
<td>232</td>
<td>232</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>222</td>
<td>222</td>
</tr>
</tbody>
</table>

Lending libraries of books are attached to 44 schools.

Thirty-six Sunday-schools, attended by 1440 children, are returned from places where no other school exists. Fifty-six schools, containing 2816 children, were both Sunday and day schools. The number of boarding-schools is forty-six, and the scholars are included in the returns. The total number of children observed as attending Sunday and day schools of all kinds is 51,530: in 1841 the total number of children in the county between the ages of 5 and 10 was 32,554, and 29,798 were between 10 and 15.

WIMBORNE MINSTER, a very ancient market-town in the eastern part of Dorsetshire, on the road from Salisbury to Poole, seven miles north of Poole, and 100 miles from London. It is supposed to have been a Roman station called Wimborina; and it is again mentioned as Vinburnam. A nunnery was established here in the beginning of the eighth century by the sister of Ina, king of the West Saxons, upon the site of which the present minster or collegiate church was built; and the grant of lands has been added to that of the church from it from Wimborne St. Giles's, in another part of the county. Wimborne Minster is pleasantly situated on the Stour, near its confluence with the Allen. There is a weekly market, a cattle market every alternate week, and two annual fairs. The town has little trade. With the exception of the minister there is nothing to indicate its former importance. The nunnery was destroyed by the Danes, when the establishment was converted into a college of secular canons, consisting of a dean, prebendaries, vicars, and other officers, which continued to exist until the dissolution, when the revenues were vested in the crown. Some of the lands were set apart by Queen Elizabeth towards the support of the grammar-school, originally founded by the Countess of Richmond, mother of Henry VII, in 1507, though now called after Queen Elizabeth. In the reign of Charles I. the possession of the school and church were vested in governors, who were to provide for the service of the collegiate church and the maintenance of the school. Parts of the minster were built upon after the Conquest. It is a cruciform structure, 106 feet in length, and consists of a chancel, nave, choir, and side-aisles, a transept, and three porches. The minster once contained ten altars of altabaster and other costly materials, and the whole structure was particularly splendid. There are two quadrangular towers, one at the west end, and the other, now surmounted by a very lofty spire, at the intersection of the cross: the whole edifice is particularly deserving of notice. The cathedral

3 K 2
service, on Saturday evenings and holidays, and has not been discontinued many years. The minster is a royal free chapel, and a peculiar in the diocese of Salisbury. The duties are performed by three incumbents appointed by the corporate body above mentioned. Several royal and noble persons have been interred here; among others King Ethelred, who was slain by the Danes in 972; also, the duke and duchess of Somerset, the maternal grandfather and grandmother of Henry VII. There are two ancient hospitals for poor aged persons. The entire parish contains 11,980 acres, and there were 4,326 inhabitants in 1841. The parish comprises Wimborne Minster (pop. 1687), tything of Holt (1313), tything of Leigh (574), and manor of Kingston Lacey (752). There are several hamlets in the parish.

WINCHESTER. [SOMERSETSHIRE.]

A WHEEL AND AXLE is a machine constituting a small windlass, and consisting of a cylinder of wood which is capable of turning on its axis between two upright posts of the same material, or between the ends of a cast-iron frame; a lever at one or at each extremity of the cylinder, is attached to an iron axle passing through the latter at right angles to its direction, and is furnished with a handle, which is parallel to that axle. The name winch is given to a lever or handle of this kind, and the word is supposed to be derived from the verb guincher, signifying, in old French, to bend in a curve. The lever, in a manner, is a cylinder, and the machine is used to raise a weight vertically, or to draw an object towards it; for which purposes the object is connected with a rope or chain which continually passes over the curve of the cylinder, and is turned by a man acting at the handle. Since the cylinder revolves while the handle, or the extremity of the lever to which it is attached, is made to describe the circumference of a circle, it is evident that the mechanical power of the machine is precisely that of the wheel and axle. [WHEEL AND AXLE.] When of a simple form it is employed to raise water from a well, and earth or any other material from the shaft of a small mine; and one of a complex nature is used, by means of a crank, to raise heavy packages from the ground to the upper part of a building.

When great weights are to be raised, the machine is usually fixed in a frame of cast-iron, which is rectangular on the plan, but its extremities or faces have the form of a triangle, or of a lever, or both. The cylinder of the machine is supported on a horizontal bar at the middle of each end of the frame, and to the cylinder is attached a toothed wheel which turns with it on the common axis: above this wheel and parallel to the cylinder is an iron axle which carries a pinion revolving with the cylinder, and causing the latter to rotate, the pinion itself being turned by means of the lever and handle at one or at each extremity of the frame. A machine of this kind is called a crab; and when a weight is to be drawn horizontally, or raised to the level of the cylinder, two wires are placed at any angle to one another; consequently when one man is pushing or pulling horizontally, the other is pressing or pulling vertically, and thus the operation of turning goes on with nearly uniform intensity; the first man working in the position of the other is working in the pulley, which is diminished by the difference between the two circumferences, and the weight is raised up through a height equal to the difference. Hence by mechanics, if 2R represent the circumference of the cylinder described by the handle of the winch in one revolution, the half sine of the difference between the circumferences of the two cylinders, W the weight to be raised, and P the power applied to the handle, we shall have, in the state of equilibrium, \[
\frac{r - r'}{2R} = \frac{P}{W}.
\]

The weight which may be balanced by a given power \( P \) will evidently be greater as \( r - r' \), or the difference between the radii of the cylinder, is less; and the difference of these, which may be called the tangent of the angle which is made by the handle with the vertical, is the mechanical advantage of the machine. The only disadvantage attending the machine when compared with an ordinary winch or capstan, is that it requires a much greater quantity of rope to raise or move the object through any given distance. It was first proposed in Europe by Mr. George Eckhardt, on the plan of a little machine which act on others at the circumference of a small wheel; and on the axle of this is a pinion with teeth, which work in those of a rack-rod. The axes of the wheels and pinions being let into the sides of a case of wood or iron, the revolution of the wheel produces the revolution of the rack; and one end of the case being fixed to the ground or against an immovable object, the extremity of the rack at the opposite end forces forward the body which it is to be displaced. Sometimes, instead of a rack, the machine is furnished with a wheel whose circumference is divided and cut in the form of a concave screw; within this screw is one of the convex kind, by which the revolution of the wheel and its axle is made to move in the direction of the latter, and thus to press before it the object which it is to be moved. This machine has however considerable friction.

The force exerted by a man in turning a winch vertically varies according to the position of the lever with respect to the horizon. When the lever, or that part which is perpendicular to the axle, is perpendicular to the ground, and the handle is at the highest or lowest part of the circle described by the end of the lever, the man either pushes the handle directly from him or pulls it directly towards him; and in each case he exerts a power which is estimated at twenty-seven or thirty pounds; but when the lever is in a horizontal position, the man either throws a great part of his weight on the handle to press it down, or he exerts his muscular force in a direct manner to pull it upwards; and the force exerted in these positions is estimated at 60 or 70 pounds. The force exerted in these positions have different values between these quantities in other positions of the winch; and the practice is to cause two men to work at the same time to turn the machine, one being at each extremity of the axle of the cylinder. The wires are placed at any angle to one another; and consequently when one man is pushing or pulling horizontally, the other is pressing or pulling vertically, and thus the operation of turning goes on with nearly uniform intensity; the first man working in the position of the other is working in the pulley, which is diminished by the difference which is met.
WINCHESTER, an ancient city, a municipal and parliamentary borough, and the see of a bishop, in 51° 4' N. lat., 1° 19' W. long., is 624 miles south-west from London by the road, 64 miles by the South-Western Railway, and 128 miles from the railway station at Southampton.

The town in 1154, the metropolis of England; its origin is lost in the fables of tradition. The Britons are said to have called it Ceur Gwent, or the White City; the Romans by whom it was first subdued named it Venta Belgarum; the Saxons, who were the next possessors, named it Wintaneccester, which has become Winchester; in Latin deeds and by the Latin writers it is called Wintuncia.

Winchester appears to have flourished under the Romans as long as they remained in the island. The modern town is situated on the site of the ancient city, which, as it is stated above, was divided by the Britons. In 519 it was conquered by Ceretic the Saxon, who afterwards made it the seat of his government, and it continued to be the capital of the West Saxon kings till Egbert, the first king of the whole heptarchy, was crowned there, and then it may be said to have become the metropolis of England. Though sometimes plundered and in the possession of the Danes, it continued to be the capital of successive Saxon kings till 1016, when Sweyn, the Danish king, met his death here. But when Robert, one of the first of the Norman kings, became king in 1052, Winchester became the seat of his government. After his death a fierce struggle ensued, and England is said to have been ultimately divided into two kingdoms; London became the capital of the Saxon; Robert of Normandy, afterwards Edward Ironside, till Edmund's death in 1016, when Canute became sole king and Winchester sole capital.

After the Norman conquest Winchester continued to be the capital, and during the reign of Henry I. the ancient Saxon borough and its suburbs were surrounded by strong walls; was defended by a castle built by William the Conqueror on the west, and another, subsequently erected for the residence of the bishop, on the east; there was an extensive palace and numerous mansions of the nobility; a cathedral of the Norman work; and a large number of churches; the suburbs extended a mile from the walls in every direction; to the north, on St. Cross, to the south, on Week, and to St. Magdalen's Hill on the east.

The reign of King Stephen when Winchester began to fall from its high estate. While Stephen was a prisoner in Gloucester Castle a contest commenced between his queen and the Empress Matilda, aided by their respective partisans, which was carried on for several weeks in the streets of the city, and ended by the burning of the whole of the town north of the High Street, the royal palace, the abbey of St. Mary, Hyde Abbey, and about forty churches, were burnt down or laid in ruins. The death of Stephen was the signal for 133 unrebated and unmeditated warfare. Henry II. resided much at Winchester; he rebuilt the palace, and, to a considerable extent, renewed the city; but London seems to have found more in the eyes of subsequent kings, and Winchester lost its dignity as capital of the kingdom.

In the contests between Henry III. and his barons, Winchester suffered severely, both parties alternately gaining possession of its castles, and carrying on the work of destruction in the city. From this time Winchester, though part of the property of the Crown, was never more than a suburb of the growing city of London. The church of the cathedral, and other ecclesiastical and scholastic establishments, seems to have declined rapidly. In the reign of Henry VI. a petition was presented to the king, which stated that 597 houses were uninhabited and seventeen churches were shut up. The corporation, previous to the Municipal Reform Act in 1835, was styled 'the mayor, bailiffs, and commonalty of the city of Winchester.' The governing charter was 30 Eliz., and the corporate body consisted of a mayor, six aldermen, twenty-four men, and an officer, the mayor, the number of burgesses, or municipal electors, in 1557 was 817. The total annual expenditure of the borough in 1841-42 was 2163l. 17s. 6d., the chief items of which were—494l. 15s. 1d. for police and constabulary; 10s. for salaries and other allowances to municipal officers; 300l. for gaol, and maintenance, &c., of prisoners;
Henry in 438, the termination was 1884 (4 James 11.). A new charter was granted September 15, 1688 (4 James 11.), which re- cites the surrender, and then renews the franchises in nearly the same terms as the charter of 1638; this charter was confirmed and extended by another, Nov. 6, 1688.

The bishop of Winchester extends to Hampshire, Surrey, Guernsey and Jersey, and two or three benefices in Wilts and Sussex. The net yearly income of the bishop, as given on various dates for three years prior to 1831, was about £50,000. By the same average the net income of the whole of the benefices in the bishopric was 143,614/-, and the annual stipends paid to curates amounted altogether to 19,856/.

The gross yearly income of the dean and chapter of Winchester was by the same average £15,334/., and the average yearly payments charged upon and paid out of this income was £2700; leaving a net income of £12,783/.

The town has no trade of consequence, but the statements of population show that it is in a state of gradual improvement. Being the centre of an agricultural district, it has a good corn-market, which is well attended. Few cattle are sold, but there is a large annual sheep-fair. Several improvements of late years have been obtained for the improvement of the city and suburbs, most of which relate to the navigation of the Itchen.

Winchester Cathedral, which is one of the largest cathedrals in England, is in many respects one of the most interesting. The entire length of the building is 465 feet. From the west entrance to the choir is 356 feet; the length of the choir is 135 feet; and the Lady Chapel, at the east end, is 86 feet, which makes the total length. As a distinct part, the nave is 220 feet long, 86 feet wide including the aisles, and 70 feet high; the choir is 60 feet long, and 49 feet wide. The dimensions of the transepts is 186 feet. The square of the tower is 48 feet by 50, and the height is 1384 feet, which is only about 36 feet above the roof: of course it has a low and squat appearance, and was perhaps not intended to contain bells, but only as a symbol of the church. The effect of the height of the tower is increased by the height of the nave, which is 70 feet. There is no other part of the church which the height of the nave, the stricken with their wide circumference and massy appearance, and his admiration is perhaps rather increased than diminished when he learns that they are the Saxon or early Norman pillars inclosed in a Gothic casing of clustered columns. Of the 28 boy s, 27 have been converted by intersections into pointed arches, and the original Saxon nave thus made Gothic.

The original structure of Winchester Cathedral, which is the finest and oldest in England, converted to Christianity, was destroyed by the pagans in the 1st, and rebuilt by one of his successors, the Christian Kingin. Some of the most substantial walls and pillars of the present structure were erected by St. Ethelwald, bishop of Winchester, who lived to finish it, and which is said to be W. in 690. In 1079, having been much damaged by the Danes, it was repaired by Bishop Walekyn, who built the present tower, with part of the nave and transepts, and in 1083 re-dedicated the church to St. Peter, St. Paul, and St. James. The choir was rebuilt about a century afterwards by Bishop Godfrey de Lucy, and the whole of the west end was repaired and renewed by the successive bishops Edynford and Wykeham. The grandeur of the west front is due to Wykeham. The part between the tower and the Lady Chapel was added in the early part of the sixteenth century by Bishop Fox, whose statue, under the canopy, terminates his improvements to the east. There have been many recent restorations and repairs of the cathedral, which have been executed with good taste, at the cost of many thousands of pounds.

Among the monuments in the cathedral may be mentioned the tomb of William Rufus, of plain grey stone, without inscription, in the choir; the six mortuary dees of wood, carved, painted, and gilt, in which Bishop Fox deposited the remains of Saxon Kings and other distinguished persons, which he transplanted from the deep lead coffins in which they had been buried; and especially the beautiful chantries or oratories of the bishop Edynford, Wykeham, Beaumont, Wyntfe, and Fox.

Over the altar is a large painting by West of the slaying of Lazarus from the Dead, which is considered one of his best works.

The present establishment of Winchester College, which, after the dissolution, was dedicated as a chantry for prayer for the souls of King and Queen, the bishops and abbots of Winchester, and all the bishops of the diocese, is a most imposing edifice, consisting of four stories, six minor canons, ten lay clerks, or singing men, eight choristers, and other members. The last prior was William Basing, who was made first dean, and died in 1549.

Winchester College (St. Mary's College), which lies next the cathedral, was founded by King John, at whose instance the Bishop of Winchester, William of Wykeham, in 1387, on the site of the "grammar-school of Winchester," at which he had been educated. The college was founded and endowed by Wykeham as a preparatory college to New College, Oxford, which he had founded, and by which he had bequeathed to the college of Winchester the dean and chapter of Winchester and the advowson of Winchester College, to supply vacancies which may happen in New College during the subsequent year. Besides the scholars on the foundation there are generally upwards of 100 boys not on the foundation, who are lodged in a spacious quadrangular building contiguous to the college.

The entrance to Winchester College is by a gateway into an outer court, which leads by another gateway into a large quadrangle, which is formed by a long building, 100 feet square, and is 32 yards. The chapel and hall form the south side of this court; they are beautiful specimens of Gothic architecture, worthy of the founder. The cloisters adjoin the chapel, and form a square, each side of which is about 120 feet.

The line of the centre of the area of the cloisters is the library of the college, which was originally erected as endowed as a chantry by John Promont in 1400. The chapel was removed to the Reformation, and the building remained unappropriated till about 1623, when it was converted into a library by the liberality of Dr. Pinke, warden of New College. It is a handsome building, corresponding in style with Wykeham's original erections in the school-room, which was built by a subscription from the Wykehamists in 1697, at a cost of 3253/., and is pointed arches in general, the most beautiful of its kind. Over the entrance is a fine statue of Wykeham, by Caius Gabriel Cibber, the father of Colley Cibber, who modelled and cast at his own expense, and presented to the society.

The entrance hall is a fine room 50 yards square, and the done stone.

The manor of Wolcot Castle are at a short distance south-east from the college. This castle, once the residence of the bishops of Winchester, was built, in 1386, by Henry deBlis, brother of King Stephen and John of Gaunt. it was inhabited by the descendants of the Saxon kings. It was a place of great strength till it was demolished in the reign of Henry II. It continued to be the residence of the bishops till it was demolished by Cromwell in 1646.

The village palace, begun by Bishop Morle, in 1654, and completed by Bishop Trelawny, was suffered to go
The Cross, in the High Street, is supposed to have been built about the beginning of the fifteenth century. It was the subject of the famous poem of St. Germain, founded by King Arthur. The Cross was on an octagonal base of five steps. The circumference of the lowest step is 49 feet, and the height is 43 feet. The cross consists of three tiers of Gothic arches, and it is built in the quaint niches and canopies.

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Symonds's College (properly Christ's Hospital) was, as the ascension over the entrance gates, founded in 1607, by Sir Symonds, a native of Winchester, and afterwards a career of the city of London. The endowments are held by his executors, a master, a matron, and four

The Chapel of Winchester Castle, which was a building detached from the Castle, and at a short distance, was not a public library and reading-rooms. The chapel is very beautiful, and it is to be regretted that it is divided into law-courts, with jury-rooms, and reading-rooms, of statutes, of which the Society of the University is the parish church of St. Swithin, built by King Henry III. on the old postern of St. Michael, or King's Gate. The Guildhall, or Town Hall, in High Street, was built in 1712. The County Gaol is a block edifice, the front of which is a handsome and well-shaped structure of stone, built in 1846. The City Bridge, over which the canals cross, he was built in 1710. A statue of Henry III. was erected in 1759. The north wing was added a few years afterwards.

It is supported by voluntary subscriptions. The School Schools of Winchester are conducted on the proviso that none of the students shall be allowed to attend any other school than the School Schools of Winchester. They are supported by voluntary subscriptions.

St. John's House, which is the principal standing-room and assembly-room, is on the site of St. John the Baptist. There is a small theatre for the amusement of the students. The Hospital of St. Cross, about one mile south from Winchester, was founded and endowed in 1159 by Henry II. It was a perpetual reversion for poor men past their strength, and for 100 old women. As the charity grew in the 16th century, the church added a glass of ale and a small sum to persons who call at the hospital. The school is very useful, a cathedral in miniature, and the building which remain are a specimen of the architecture of the period of Henry II.

In 1735, in his eighteenth year, he went to Berlin and studied at the Academy there. During this time, he walked to Hamburg to attend the sale of the books of the celebrated Fabricius, and to buy some good editions of the ancient classics. The money for the journey and the purchase of the books he begged of the clergy, and, in 1735, about 120 books were bought in Hamburg. He lived in the Holdorf street, at Dresden, and in the opening of 1738, he entered the university of Halle, with the intention of studying theology. He remained two years at Halle, and found that the study of theology did not suit him. In 1741 he procured a situation as tutor in a private family at Oppenheim, in Hesse in 1742, he procured a situation at Heimert, near Heilbronn, where he commenced the study of general history, and is said to have read Bayle's "Historical Dictionary" twice through. In 1743 he was appointed Conrector of the school of Heß-"ton, a miserably paid post but it did not damp the courage of Winckelmann. He seldom went to bed; he used to sleep on a bench wrapped in a foul cloth; devoting what time he could spare from four in the morning until nine at night to the study of ancient literature and history. In 1746, when he was in this situation, he inspected the Graf von Buxan for a situation in his library at Nöthemitz, near Dresden. The place of librarian was engaged, but the court offered Winckelmann that of secretary of the palace of the Elector of Saxony. He was sent as secretary to Dresden, and the attractions of the great gallery there, induced him often to perform the journey from Nöthemitz to the Saxony capital, where he became acquainted with artists, and he endeavoured to become one himself, but to apply himself to the study of numbers. He finally decided to resign his situation and devote himself to his history and theory. In his ramblings in the gallery he formed three valuable acquaintances—those of Oeser, the painter, and of the distant Lepart and Hausdorff. Winckelmann, however, after much reflection, decided against the plan, and so not a single position was offered him by the Saxony court.

The first fruit of these advances was his able work entitled "Reflections upon the Limitation of the Authentic German Art" and the "Nachahmung der geschichtlichen Kunste," published in 1746. Of the ten copies only five were printed, and it was a library copy, and remained in the hands of the author, and Winckelmann, and Lepart, and Hausdorff, with a person of two hundred and eighty-six, granted by the sector of Saxon for two years.

The book on which he went to Mergas and the "Liberian" in the shape of a cabinet was printed in 1746, and he was published the "History of Wine" in 1746. Of the ten copies only five were printed, and it was a library copy. In 1747, he published a new book on the same subject, the "History of Wine" in 1747, and it was a library copy.
Winckelmann's chief work is his 'History of Ancient Art,' but it is very incomplete, as he himself was aware; nor can it be looked upon as any more than the Germann edition prefixed to the first edition of the 'History of Ancient Art,' by Feis, and the German Dresden edition of Winckelmann's complements, in eight volumes. Angelica Kauffman also painted his portrait, an etching of which is prefixed to Kinnaldy's "History of the Arts of Antiquity" ('Renaissance-painting of the Antients').

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Winckelmann's chief work is his 'History of Ancient Art,' but it is very incomplete, as he himself was aware; nor can it be looked upon as any more than the German edition prefixed to the first edition of the 'History of Ancient Art,' by Feis, and the German Dresden edition of Winckelmann's complements, in eight volumes. Angelica Kauffman also painted his portrait, an etching of which is prefixed to Kinnaldy's "History of the Arts of Antiquity" ('Renaissance-painting of the Antients').
sation of a wind would be experienced. The tides which take place in the atmosphere by the attractions of the sun, moon, and planets on the particles of air giving rise to differences in the heights of the vertical columns, they must necessarily cause inequalities of pressure in horizontal directions, and thus produce winds or currents of air; but it has been shown by La Place that these currents are scarcely sensible; and such attractions are by no means adequate to account for the wind which are observed on the earth's surface.

The phenomena and causes of the great currents of the atmosphere have been already described and explained (see the references at the end of this article); therefore the present work shall consist after this time in seeing how the land-breezes and sea-breezes which occur diurnally on the coasts and in the islands of the tropical regions, and the periodical winds which are observed to prevail in some parts of Europe. The first are most probably caused by the inequalities of the sun's heat on the land and water; and both, by the tendency of the atmosphere to preserve a state of nearly uniform density. It is well known that the sun's rays in passing through a glass vessel filled with a transparent fluid communicate to the latter very little heat, and that if the fluid be rendered opaque, or an opaque body be introduced into the vessel, the temperature is sensibly raised in consequence of the caloric combining more readily with the opaque than with the transparent material. Now, on the other hand, the air which remains in the space above the ocean is more rarified, and temperature higher than that of the neighbouring ocean: the atmosphere above it consequently becomes rarefied, and from about 9 a.m. the air from the sea flows towards the land, to occupy the partial vacuum there produced. In proportion as the wind becomes greater the force of the sea-breeze also increases, and this continues till 2 or 3 p.m. After that time the temperature over the land diminishes more rapidly than over the sea, as the heat more readily dispenses itself from the land than from the sea, and the sea-breeze ceases. During the night, the land continuing to cool, the air over the sea becomes comparatively warmer and more rarefied, and a breeze from the land takes place: this wind augments in force till near sunrise, when the temperature over the land becomes greater than over the sea, and the wind blows from the sea as at first. These land-breezes diverge in every direction towards the coasts of the tropical islands from the high lands in their interior. Mr. Redfield modifies the hypothesis above stated by assuming that when the stratum of air lying on the surface of land which ascends towards the interior of a country becomes rarefied by the sun's heat, it is forced by an excess of pressure at its lowest part to move up the slope; and that the air thus rising, and the surface acquiring greater density, its gravity causes it to descend towards the sea. (Amer. Journal of Science, vol. xxxiii, No. 1.)

The eolian winds (so called from διαοιν, annual) is a description given to those which every summer blow during six weeks over the countries bordering the Mediterranean, but it has since been applied to other periods as winds, which blow on the coast of Holland. They commence in the Levant about the middle of July, rising at 9 A.M. and continuing during the day-time only: the direction of the current of air is from north-east to south-west; and it is probably caused by the rarefaction of the atmosphere nearly under the tropic of Cancer, consequent generation of the heat of the sun at that time, and the pressure of the sea-breeze from the sea-breezes diverging towards this point. The sea-breezes from the sea increase during nine days only. (Nat. Hist., lib. ii, e. 47, &c.)

Winds depend on a great measure on variations in the temperature of the atmosphere; they are therefore not subject to any known laws, and, except in a few cases, their periods are not due to any particular cause. They are observed however, in addition to what has been said respecting the trade and other regular winds, that those which prevail in the temperate zones are probably the result of currents proceeding about the earth from the tropics. Mr. Issel has described the 'Chimie' Magazine for September, 1837, that when the sun is on the meridian of any place, as London, situated beyond those regions, the currents of heated air which proceed from the point vertically under him must arrive at that place from the south earlier than at any other place eastward or westward of it, in the same parallel of latitude.

But in proportion as the sun becomes successively vertical at different points westward of the meridian of London, the currents of air, in describing great circles of the sphere, arrive later, and in a direction from the westward of south; and when, during the summer, the point of intersection of the sun's rays and the equator is about 60 degrees west of London, that is, in the evening, they arrive nearly from the west. At midnight, when the sun is on the meridian under the horizon, the current of air passing over the north pole is felt as a north wind; and in the opposite season, when the point of the point of intersection of the sun's rays and the equator is about 60 degrees east of the meridian of London, that is, in the morning, they arrive nearly from the east. By the influence of currents which proceed from the pole to the equator in order to supply the place of the heated air which descends from the surface of the earth between the tropics.

The sun is not the sole cause of the currents which are observed in the atmosphere, for they often arise from the condensation of the aqueous vapours which are constantly rising from the surfaces of rivers and seas. Such vapours, by the same means as have been described above, are accompanied with them a quantity of calorific, which escapes on arriving in a region where there is less of this element than at the surface of the earth; and the vapour being then reduced to a state of water, a partial vacuum is produced, into which the air, driven by the rarefied or heated air, is conveyed, at the same time, by the wind the drops of water, and thus the region in which the rain is falling is sometimes warmer than those which surround it. Rain-winds are produced by the air which descends to the ground under the globules of water. As these globules are engaged from the globules on the latter striking the ground, are then driven off, with considerable force, in every direction from the place where the rain is falling. In explaining the cause of the cold and dry state of the atmosphere in the north-western part of Europe, it is usually accompanied a north-east wind, M. Monge observes, in the 'Annales de Chimie,' that the currents of air from that quarter, having passed over mountain-lands, experience, from their elevation, a diminution in the general atmospheric pressure, in consequence of which they lose part of the water which they held in solution, and thus they acquire greater specific gravity. Hence, in advancing over the lower lands of Poland and the north of Germany, the weight of the atmosphere which is increased; the moisture then rises in the barometer tube, and the upper strata of air, whose temperatures are lower than that of the air near the earth, descend towards the ground. The air in these strata, being far from the point of condensation, carries also a great deal of water in the lower regions of the atmosphere; and this, by carrying off calorific, contributes greatly to produce the degree of coldness which is experienced.

All mountain districts are subject to sudden and violent gusts of wind from the intertwinings which the ridges of high land create to the general currents of the air; but that which is called the Helm-wind at Crossfell in Cumberland is one of the most remarkable of these phenomena. It occurs at uncertain times between the middle of August and October. In the last week or month of the autumn, the Helm-wind, though it is usually, though rarely, in summer. It is stated that, when not a breath of wind is stirring, and scarcely a cloud is to be seen, there is suddenly formed a line of clouds, called the 'Helm,' extending nearly north and south along; the top layers of air being detached; and nearly parallel to this, another line of clouds, called the 'Bar,' forms itself; the first of these lines of clouds is well defined within its western, and the other at its eastern edge; and the lines unite together at their northern extremity, forming an elliptical space whose length, in the north and south direction, varies from 8 to 30 miles, and its breadth, in the east and west direction, from half a mile to 4 or 5 miles; the highest point of the ridge of clouds is at the last of the first line of clouds. In a few minutes after the formation of the Helm a violent wind begins, within the space between the clouds, to blow from some
eastern point of the compass, but generally from due east to due west: its force is such as to break trees, disperse the grain in stacks, and overturn a cart with its horse: it continues frequently for nine successive days, and its motion is said to resemble that of the sea in a violent storm, but it is seldom accompanied by rain. No satisfactory hypothesis has yet been offered to account for the phenomenon; but that which seems most probable is, that the air from the elevated portion of the country, in the latitude of the humberland, has ascended the summit of the mountain and there condensed, descends from thence with great force, by its gravity, into the district at the foot of the western escarpment. (Rev. J.Watson, in "the British Association," vol. iv.)

If we contemplate the influence of the winds in the economy of human life, we shall find them highly beneficial. Though storms are often destructive to life and property, both at sea and land, yet they contribute greatly to the fertility of the soil. The alternate drying and moistening of the earth, occasioned by the alternation of nitric and exhalations: the winds impel the clouds from place to place, and thus diffuse over great tracts of country the rains which contribute so much to fertilize the ground. Wind is extensively employed in giving motion to machinery; and, till the recent application of steam, it was the only power by which ships were transported across the ocean between different regions of the earth. [ATLANTIC OCEAN; MONSOONS; TRADE-WINDS; WHIRLWINDS.]

WINDAGE is the quantity by which the bore of a gun, mortar, or shell, exceeds that of the shot or shell which is to be discharged from it.

The deviations of shot and shells from a truly spherical figure, and the inequalities in the bore of the ordnance, were formerly considerable; and on these accounts it was necessary to have a sufficient clearance between the assumed diameters of the ball and bore, in order to ensure the possibility of making the former enter into the latter: it followed from the greatness of this clearance, which in the British service was about one-twentieth of the diameter of the bore, that much of the fire-gunpowder escaped without producing any impulse on the shot, and that the latter was driven from one part of the surface of the bore to another; so that, on being expelled from the gun, it deviated widely from the intended direction of its flight.

For the year 1775, when Dr. Smellie made his famous experiments on the velocities of shot, the disadvantage attending a great windage was known, and a diminution of its quantity was proposed: but the precise amount of the force lost by it was not ascertained till the years 1784 and 1786, when experiments were made for the purpose, in part of determining that important circumstance. From these, it appeared that about one-fifth of the charge of powder was lost by a windage equal to '06 inch, or of the calibre (== 2 inches), and a further loss, amounting to between a and of the charge, was occasioned by an increase equal to one-tenth of an inch above the former windage.

The correct geometrical forms which are now given to the balls, and also to the bores, permit the windage to be reduced much below its former degree; and the following table contains, in fractions of the calibre, that which is now allowed in this country for the shot and shells appertaining to some of the heaviest ordnance:

<table>
<thead>
<tr>
<th>Shot and Howitzers</th>
<th>1/16 inch</th>
<th>1/32 inch</th>
<th>1/64 inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 10-inch mortars</td>
<td>1/16 inch</td>
<td>1/32 inch</td>
<td>1/64 inch</td>
</tr>
<tr>
<td>For 5-inch carronades (diam. of bore)</td>
<td>1/4 inch</td>
<td>1/8 inch</td>
<td>1/16 inch</td>
</tr>
<tr>
<td>For 32-pounders (diam. of bore)</td>
<td>1/8 inch</td>
<td>1/16 inch</td>
<td>1/32 inch</td>
</tr>
<tr>
<td>For 24-pounders (diam. of bore)</td>
<td>1/32 inch</td>
<td>1/64 inch</td>
<td>1/128 inch</td>
</tr>
</tbody>
</table>

WINDAU is a seaport in Courland, at the mouth of the river Windau, which rises in Wilna, traverses Courland in a south-westerly direction, has a fall of 21 feet near Goldingen, and empties itself into the Baltic at Windau, where it forms a small harbour; but there is a capacious roadstead, well secured by sand-banks which break the swell of the sea. Windau is a small ill-built town, with unpaved streets; there is an ancient castle, situated on an eminence, the church of which is now the parish church. The population hardly exceeds 1200 or 1300, mostly merchants and shopkeepers. There is a productive fishery at the mouth of Windau. About 100 ships commonly visit the town, which take in cargoes of flax, hemp seed, hemp, hempseed, corn, timber, raw hides, tallow, and salt meat.

Windau appears to have been formerly a place of more importance than at present. The Estates of Courland used to meet here. (Hassel, Stein, Charnabich.)

WINDERMERE. [LANCASTER; WESTMORELAND.

WINDHAM, WILLIAM, was born on the 3rd of May, 1750, in Golden Square, London, and was the only son of Col. William Windham, of Felbrigg in Norfolk. The Windham family are an old and respectable one, and it is thought, from a discovery of their arms, that as early as the twelfth century, when Mr. Windham's ancestor purchased the property at Felbrigg, Mr. Win-
id himself was then seven for a year to the University of Glasgow, where he applied himself with great diligence to the study of mathematics, a study for which he retained his fondness and which he pursued with success in his later life. In September, 1767, he was entered as a gentleman-commoner at University College, Oxford. He left Oxford in 1771, having in the meantime refused an offer from Lord Townshend, an intimate friend of his father, to be appointed to be his secretary, and having been appointed to be with him to Ireland as his private secretary. At this period of his life so marked was the future statesman's indifference to politics, that, as we are told by Mr. Amyot, his biographer, on Mr. Windham's own authority, it was a standing jest that 'Windham would never know who was prime minister.'

On leaving Oxford, Mr. Windham went abroad. In 1773 he joined an expedition of discovery then being undertaken by Commodore Phipps, afterwards Lord Mulgrave, and afterwards discovered the north pole. When he returned he was appointed to land on the coast of Norway, and to keep the expedition.

Mr. Windham's first appearance as a public speaker, and in connection with politics, was at a county-meeting at Northwich, where he was paid a subscription in order to attend on a subscription in aid of government, for carrying on the war with the American colonies. Lord Townshend having proposed, and the Hon. Henry Hobart, brother of the Earl of Buckinghamshire, having seconded the proposal of a subscription, Mr. Windham came forward spontaneously to oppose it, and to denounce the conduct of the American war. Two years after, the interval having been passed by Mr. Windham almost entirely abroad, the memory of the speech led to his being put in nomination in the House of Commons, for the borough of Norwich, in the general election of 1780. He happened to arrive at Norwich, on his return from abroad to Felbrigg, being ignorant of the fact, and which had been made of his name, by the interest of the celebrated Lord Hardwicke, whose son and Burke were leading members. His political sympathies were with Burke and Fox, and generally with the section of the then opposition which owned Lord Rocking- ham for its leader. On the formation of the Ministry of 1782, which John- son and Burke were leading members, Mr. Windham received the appointment of under-secretary to the earl of Northington, who was appointed lord-lieutenant of Ireland. Mr. Windham occupied his office in August. The reason of his resignation was stated in Hardy's 'Memoirs of the Earl of Charlemont,' that the reason of his resignation was a distribution of patronage by Lord Northington in favour of the old court party, in opposition to the views of Lord Charlemont. When Ireland was in a state of storm, and the coalition ministry was itself at an end before the close of the year 1788. In March of the same year, Mr.
ceeding year Mr. Pitt dissolved parliament, and Mr. Windham again contested Norwich, and this time with success.

Mr. Windham made his first speech in parliament on the subject of the Westminster surtax, on the 4th of February, 1795. The particular motion was, to order the high bailiff to make an immediate return: it was opposed by Mr. Fox, who, although Mr. Windham replied, and he was followed by Mr. Fox himself, to the point on the "increase of the abilities they had witnessed." Mr. Windham was appointed one of the managers of the impeachment of Warren Hastings, the particular charge intrusted to the House was "the subsequent sacrifice of the people of the dominions of the Nabob Fyzoola Khan in 1774, after an invasion of his territories by the Company's troops, and the payment by the Nabob of the sum of 150,000/-, on ratifying the treaty." On the Regency questions which arose in 1798 out of the king's illness, Mr. Windham was a very loyal, decided and realistic man in favour of the hereditary right of the Prince of Wales to the regency, and against any restrictions on his power. When this parliament, Mr. Windham's first parliament, was dissolved in June, 1790, he had already acquired a ripe political reputation.

Mr. Windham was again elected for Norwich in the new parliament. In the division of the Whig party, which was shortly after caused by the events of the French Revolution, Mr. Windham was one of the large majorities. At the general election, which was brought on by the Duke of Portland, and zealously supported the war with France. In 1794, the Duke of Portland, Lords Spencer and Fitzwilliam, and Mr. Windham joined Mr. Pitt's cabinet, Mr. Windham receiving the appointment of Secretary of State shortly before declaring for peace in February, 1801, when he resigned, together with Mr. Pitt, Lord Loughborough, Lord Grenville, Lord Spencer, and Mr. Dundas, because the king would not consent to the measures for the relief of the Roman Catholics in Ireland which they considered indispensable to the success of the legislative union. During the seven years that Mr. Windham had been in office, he had introduced many useful reforms into the administration of the army. On the 10th of July, 1798, he married Cecilia, a daughter of Admiral Edward Lord Nelson. On the 5th March, 1807, when Mr. Windham had been returned for the county of Norfolk, but having been petitioned against, and having lost his seat for that county on petition, he had taken his seat for the borough of New Romney, for which he had been elected.

The new ministry again dissolved parliament; and, by the interest of Lord Fitzwilliam, Mr. Windham was now chosen for Higham-Ferrars. In the session of 1808 Mr. Windham strongly denounced the expedition against the Netherlands, and was a firm opponent of the fated Walcheren expedition. On the resignation of Lord Castlereagh and Mr. Canning, after the failure of the Walcheren expedition, and on the consequent offer of Mr. Perceval to Lords Grey and Grenville, which they ultimately declined, there was a prospect of Mr. Windham's return to office, which he contemplated with no pleasure. "I have not virtue enough," he writes to Mr. Amyot, to whose biographical sketch, prefixed to the Vaccine Institute, he speaks in such high terms, "to be indebted for this account, to wish the ministers out, at the risk of being one of those who may be called upon to succeed them. . . . If I could always be as well as I am here, if Downing Street were in Felbrigg Park, or a single mile from my village, I should think myself happy in it; but the being called upon to read and write, to consider and decide, when one is exhausted and worn down with one's duty in parliament, has something in it that hardly any advantages or gratifications can repay; and I am afraid my inabilities in point of health and strength are not got the better of, even in the two years that have elapsed since I was last in office." And again, "I have had letters, with copies of the correspondence, both from Grey and Grenville, who seem to think that the ministers will continue to go on, and I cannot but hope it: for, in the other event, I am sure I don't know what is to be done. . . . I feel but little stomach to return to office, unless I can have carte-blanche with every one, and even then I think myself be-devilled, that there is no restoring things to their original state." Ill-health had much to do with this disinclination for official life. He had been for some time past a constant sufferer from rheumatic complaints. In 1810, he found himself and even them "perishing" in the hip, which, having been neglected till then, caused him much alarm, and ultimately brought on his death. In July of the preceding year he had, on his return home after a meeting in the House of Commons, fallen dangerously near to that of his friend Mr. Frederick North, who was at the time abroad, and whose valuable library was thus threatened with immediate destruction, and had given most zealous assistance in carrying away
Mr. North's books, succeeding in saving about four-fifths of them before the house was consumed. During his excursion he fell and hurt himself in the hip; and this was the origin of the tumour. In May, 1810, it was found necessary that he should undergo an operation for the extraction of the tumour. The operation was performed on the 17th of that month; at first everything went on well, but about a few weeks afterwards came on a crisis, and he then grew daily worse, until the 3rd of June, on which day he died.

Mr. Windham has left behind him a reputation not so brilliant as those of his contemporaries, Pitt, Fox, and Burke, but generally as weighty, and not unworthy of the association. His was a refined and highly cultivated mind, and if his eloquence had not the power or force to make it, as Mr. Canning justly said, "the man commanding" they had ever heard in the house, it was "the most imposing." His political life was marked throughout by a high sense of honour; and if his opinions may in some respects have erred on the side of moderation, as for instance on the subject of Parliamentary Reform, which, first and last, he opposed, he had always the courage to avow opinions which placed him in opposition to those with whom he usually acted, and exposed him to popular disapprobation. He was an accomplished scholar and mathematician. Dr. Johnson, writing of a well-known gentleman, had told the story, "to which I shall not again till I come back to the regions of literature, and there Windham is "inter stellas lunas minores." In a word, Mr. Windham has been described, as the description has been generally adopted as appropriate, of a model of the true English gentleman.

His speeches have been collected and published in 3 vols. 8vo., with a Life prefixed, by Mr. Thomas Amoyt, who was for some years his private secretary.

The general name given to any machine consisting of a barrel, of a cylindrical or conical form, which turns between two points of support on a pivot at each extremity of its axis, or upon a pivot at one extremity only, the machine, by means of a rope or chain passing round the barrel, raises heavy loads or ships, or draws them towards itself. Thus the windlass and axle, the windlass by which on board of small ships the anchors are weighed, and even the capstan, are as many different forms of the same machine.

The mechanical properties of all these machines are those which have been described under Wheel and Axle, and in the two last the power of men is applied at the extremities of handspikes or levers inserted at their opposite extremities, and made in the axle or barrel to receive them. In the capstan, the axis of the barrel is vertical, the handspikes are in horizontal positions, and the men exert a continuous pressure against them while walking round; but in the machine to which the name of windlass is more particularly applied, the barrel is horizontal, like a winch and axle. In order to turn the cylinder on its axis, the men mounting on it plant their handspikes vertically in a series of holes formed at intervals for the purpose; then grasping them as high as they can reach, they pull towards themselves; when the cylinder is turned nearly a quarter round, the handspikes being almost in horizontal positions, the men throw upon them the whole weight of their bodies and by the weight the cylinder is still further turned. After this, the handspikes are drawn out of the holes in which now are in vertical positions, and the like exertions of muscular force and pressure are repeated till the anchor is weighed or the weight raised. The machine permits the power of men to be extended, in one position of the handspikes, in the most advantageous manner. In this respect it may be considered superior to the capstan: the lengths of the handspikes are, however, limited to about six feet, whereas those of a capstan may, in extreme case, be made as long as they please; and it may be added that the latter machine allows a greater number of men to act at once.

The vertical windlass, or capstan, was originally a short cylindrical column turning on its axis by means of levers or blocks, which is generally inserted in the ship, and which the perforations made to receive them at the top of the column; the pivot or axle upon which it turned entered, as at present, into the floor or deck upon which the machine was placed. It appears to have been first used, at least in Europe, on board of Portuguese or Spanish ships for the purpose of weighing the anchors, and it was introduced in the British navy in the time of Queen Elizabeth: its name is supposed to have been derived from 'capastante,' which in the Spanish navy is the name given to the machine. In its original form it was subject to a great defect arising from the trouble and delay which was caused by the necessity of raising the coils of rope on the surface of the cylinder when, after several turns, they arrived at its foot. For this purpose it was necessary to cease turning the machine, and to secure the rope or messenger, that the weight might not descend while the upper coils were being removed from the cylinder, or while the three or four lowest, which it was necessary to leave on, in order by their friction to hold up the weight when the fastenings by which the rope was secured should be cast loose, were raised to the top of the cylinder. After this, the revolutions of the machine recommenced. The removal of the coils from the lower to the upper part of the cylinder is called 'surging the messenger,' and the method just described evidently causes a considerable loss of time, which on ship-board may be an inconvenience of great magnitude.

In 1739 and 1741 the French Académie des Sciences offered prizes for the best 'Mémoires' on the subject of capstans, and several methods were in consequence proposed for constructing rope windlasses, so as to render the motion of the rope might raise itself on the barrel. In 1794 Charles Lalande suggested that the cylinder should be surrounded by a spiral projection of wood, like the thread of a wedge, the turns of which the rope might coil itself as the cylinder rotated, and thus continually rise to the upper extremity, from whence it might be afterwards removed by hand. The same astronomer also invented a species of pulley, which was afterwards generally adopted, and is still in use; it consists of an arm of metal capable of turning on a pivot near the lower extremity of the barrel; and as the latter revolves, dropping by its weight into a notch cut in the upper surface of a ring of wood or metal which is fixed to the floor or deck and round which it runs, or drawn up by hands, or drawn out by windlasses.

Capstans are now generally made, as in the subjacent figure: the axle or central part of the barrel, which appears at A, is a cylinder of oak, on the surface of which are cut openings, strong enough to admit six other of similar shape and of four inches each, called, like butresses; these are at equal distances from one another, and have their faces inclined to the axis so as to give to the part of the machine on which the rope or messenger is to turn a pyramidal or conical figure. The upper part, C, of the capstan, is cylindrical, and is called the drum-head, has notches on its inferior surface to receive the heads of the ribs; and on its convex surface are the holes a a, Sc. for the reception of the bars by which it is to be turned. The ribs, by the friction which they create, prevent the rope slipping on the bar, and the conical form allows the rope easily to ascend towards the upper part as it winds about the barrel. Pulleys similar to those above mentioned are shown at B, B, B.

Frequently the capstan is made to consist of two parts, each similar to that which has been described, and attached one above the other to the same vertical axle; one of them being on the quarter-deck, and the other on the main-deck of
WIN

W I N

The page contains a text about windmills, describing their components and how they function. It mentions various parts such as capstans, sails, windmills, and their actions. The text seems to be extracted from a larger document, possibly an encyclopedia or a book, discussing the mechanics and operational aspects of windmills. The text includes terms like capstan, sails, and windmill, indicating it is related to engineering or mechanical sciences.
ingly; and the construction as well as the expansion of a sail is actually effected by means of ropes fastened to it in three places or more. These ropes may be either drawn tight or relaxed as required; but for either purpose it is necessary that the mill should for a time be stopped; and as the stoppage is attended with great inconvenience, several methods have been devised for rolling and unrolling the sails while in motion. One of these, which was invented by Mr. Bywater, consists in the application, on each arm or whip, of a cylinder or roller to which the canvas is attached; the outer end of which is at the extremity nearest to the axle; the teeth of this wheel work in those of two other wheels, and the motion of one or the other of these being stopped, the cylinder rolls up or unrolls the canvas, being controlled by its action on the axle by the action of the sail. Several methods have also been proposed for equalizing the action of the wind on the sails of a mill, and they consist generally in the employment of a series of valves fixed in the framework of each sail. These valves revolve on pivots which run in grooves in the upper part of the frame. The plane of each valve is oblique to the lines in which the wind impinges on it, the direction in which the latter blows being supposed to be parallel to the horizon; and the whole is inclosed in a fixed cylinder having the same horizontal diameter as the other. The wind thus impinging acts upon the oblique surfaces of the boards about the interior cylinder on one side of the axis, while it is, in a great degree, prevented by the screen from acting upon the boards on the opposite side; these boards therefore meet with small resistance when, during every revolution, they come up towards the quarter from whence the wind blows. In horizontal mills one board may receive an impulse equal to that which the wind communicates to a sail of equal area in a vertical mill; but in the latter all the sails are acted upon equally at the same time. Mr. Smeston estimated that the power of a horizontal mill was only about one-fourth of the power of a vertical mill, the former only one or two can receive the impulse of the wind, and there is always, besides, some resistance experienced in returning against the wind. Mr. Smeston states that in one instance windmills were raised to a height of 120 feet. Whether this is the case, or whether the height of 120 feet is only an estimate, it is certain that the windmills were raised to a considerable height, and that the power of the horizontal mill is about one-fourth of the power of a vertical mill. It is a matter of great importance to the windmill to have the greatest possible power from the wind. The power of the latter is not more than three or four times as great at that of a horizontal mill. The effective power of the vertical mill is however so much greater than that of the other kind, that the latter is now seldom constructed.

For an account of Mr. Beaton's improved construction of horizontal mills, see Brewer's edition of Ferguson's 'Lectures,' vol. ii. The effective force of the wind in turning the great sails of a mill is investigated in the article WINDMILL.

WINDOW. Though almost unknown in ancient architecture, at least in the religious and other monumental structures of the Egyptians, Greeks, and Romans, which were not of a natty and pleasing description, and perhaps not of an ornament to public edification, and still less of a use to the orders of the temple. Gothic without windows would be as deficient in expression as Grecian architecture without columns. Grecian architecture, on the contrary, hardly admits wind-
even of mere architectural finish and the expression derived from it, doors and windows claim it in the first place. Unless decoration be bestowed upon them, instead of being features in the design, they will show themselves only as blemishes, and in proportion as ornament is applied elsewhere, the whole will become incongruous patchwork.

The principle to be attended to is so generally disregarded, and its being neglected has occasioned such a false and vicious system of architectural design, that it cannot be too strongly insisted upon, with a view to its adoption. New forms of most striking instances of the faulty practice of leaving windows mere naked apertures, while even excess of decor is affected elsewhere: hence his festoons, panels, pilasters covered with arabesques, and other things of that kind. In order to secure the general effect of the building when it has become more general to bestow some sort of dressing on windows, there is seldom that study given to them which could be wished. Either the dressings are meagre or tame and insipid, and the windows are not so much the architect's own. If ornaments, as patterns appropriated by him from the common stock, and applied perhaps nearly at random.

It is one very great advantage of the Gothic or Pointed style, that there the windows derive strong architectural effect, because they are near so many other parts, like the columns, transoms, and traceried inserted in them, mainly form the design and decoration; while the external mouldings and ornaments contribute to them only in a subordinate degree. Consequently, in those places where plain windows are necessary and more vacant spaces. Widely different is it in those styles where the ornamental design is confined to the mere exterior or framing of the aperture: therefore however they may be so decorated, the openings will never appear so suitable, or in a more perfect style, and the glazed, and the glazing of the windows will appear to be in want of adequate support. Such is the case with the windows of St. Paul's, where the apertures are filled in only with very ordinary glazing in small panes, and consequently lose all their effect, and are as much as sombre, dingy appearance; whereas in Gothic windows the glazing shows itself to be firmly supported by the mullion, and is never extended over such large broken surfaces, let the size of the window be what it may, as to produce an effect of lightness. In Lombard Hall, pirch, p. 324, and Osie: since we must here confine ourselves to windows in the Italian or modern style generally.

The same general principles, although not the same specimen, apply to doors and to windows, both being apertures in the wall of buildings; and it is well here to remark that, unless otherwise expressed, in speaking of them as features in architectural design, it is not the actual door or the glazed window which is understood, but the door, or a few windows as a whole, and the dressings around them, which last term is employed to designate the whole of the decoration bestowed on such apertures, or, in other words, the entire composition. As in the style now referred to doors and windows do not differ very greatly in their proportions, the same composition may, with slight modification, be applied to either purpose. There are however distinctions to be attended to, since both the proportions and decorations of windows depend in some degree on their situation or the particular story, and not so much on their being plain, as the same composition, or that immediately over the basement or ground-floor, requires to be marked by windows more highly decorated and of loftier proportions than the rest. For these the apertures are generally made from one square to another, and their height is something more than double their breadth. Those on the next floor rather less than two squares, and for the third they are made mezzanines—either a perfect square or very little larger than that of which the whole proportions or of the ground-floor, requires to be marked by windows more highly decorated and of loftier proportions than the rest. For these the apertures are generally made from one square to another, and their height is something more than double their breadth. Those on the next floor rather less than two squares, and for the third they are made mezzanines—either a perfect square or very little larger than that of which the whole proportions or of the ground-floor, requires to be marked by windows more highly decorated and of loftier proportions than the rest. For these the apertures are generally made from one square to another, and their height is something more than double their breadth. Those on the next floor rather less than two squares, and for the third they are made mezzanines—either a perfect square or very little larger than that of which the whole proportions or
tableau, whereby the general form of the skamandra, or dressing, becomes square headed; the chief difference between these two tiers of windows is, that those above have pediments (alternately angular and segmental), while the others have none.

It may not be improper to make some additional observations relative to the application of windows in architectural composition. Susceptible as they are of decoration in various degrees, windows do not, like columns, produce richness in proportion to the number and frequency of them; on the contrary, they require to be thinly spaced, and the greater the tendency towards the great number of those in the same range, but also the distance between the windows on one floor and those on the succeeding one. So far from a great number of windows and stories in a building being to give the desired diversity, they produce rather a contrary effect, by destroying that breadth and repose which are essential to such character. It is not the mere copying the forms and decorations of its windows that will give the effect of the Italian 'palazzo style,' since so very much of its character depends upon other circumstances, and on the proportions between the solids and voids. Hence, as Wielbeking has remarked, the general architecture both of London and Paris, even in the best streets, is very poor, owing to the windows being so numerous, closely crowded against wide pillars between windows in this country, as being suited only for a southern climate where shade is desirable; but narrow pillars are equally unsuitable for a northern one, since they cause a room to have a cold, unattractive and indifferent aspect. In the yet more modern cases, architects have attempted to lay down rules for proportioning the superficial area of the openings, or windows of a room, to the cubic space of the room; but besides being rather fanciful, this cannot consistently be followed in practice, because the size of windows and the need of light determined upon for one room must be adopted for all those in the same front—at least upon the same floor. Nicely of that kind would require that in a north or northern latitude, the relative proportion of window and wall should be very different from that adapted for a southern one, and must also vary according to the actual situation of the building with regard to others, since, with respect to light, it certainly makes a very great difference whether rooms are for a narrow or a wide street, whether the opposite buildings be lofty or low.

Nothing has yet been said on the various modes of decorating windows, and the members of which their dressings are composed. To begin, therefore, with what is perhaps the most original part of architectural decoration, we have first of all a simple border or architrave, similar to that represented in Doon, page 26, which figure also explains the mode of elbowing or kneesing the architrave, as it is called, so as to extend the lintel or horizontal part over the aperture, which makes the architrave consist of a single architrave, in order to give more importance to that part, and avoid too great uniformity of outline. The breadth of the architrave depends greatly upon circumstances, on the character of the general design, and on the taste of the designer: where the dressing consists of no more than an architrave, greater breadth may be given to it (nearly a quarter of that of the aperture) than where the sides are flanked by other members and the dressings forming a second or external architrave. In like manner the character of the architrave itself admits of great variety of expression: it may be merely a single plain surface surrounded by mouldings, as in the example just referred to, it may be divided into two, three, or even more facets, and may be carved with various mouldings carved; for its being a single border to the window-opening is no reason why it should not be a rich and effective one also.

The next step in the progress of decoration is to surround the lintel by a cornice, which is extended the full width if the architrave around the window be 'elboved,' or else rests upon consoles; nor is it by any means unusual to employ both eaves and cornices. After this, further decoration is obtained by introducing a frieze between the mouldings of the lintel and cornice, thus producing a regular entablature, which, however, may be variously proportioned and decorated. To convey an adequate idea of the very great diversity of design which is met with in regard to these few circumstances of composition, would require a very great number of examples, and those drawn upon a tolerably large scale.

The following remarks apply to the two examples from the Erechtheum and the Pantheon, represented in the article Doon, p. 86; but it must be premised that those cubs show only the general forms, without the less detailed and more enrichments. The fine specimen of Greek taste, and in perfect accordance with the columns of the portico—reduced in expression, and though simple in composition, even luxuriant in enrichment—is an instance of what, for want of more precise terms, I have termed 'the pure Greek style.' In the architrave, for in addition to the mouldings immediately surrounding the aperture, and constituting the architrave proper, there is an external border surrounding it, being continued over the lintel of the succeeding opening, and divided between that and the cornice. The architraves are not elboved, but the cornice is extended, owing to its being supported on consoles, which last are of different form, and not so long as those generally used. In the other example referred to, there are neither architrave nor consoles, but there is a full entablature, and though the frieze is narrow, such proportions suit a door or window of the kind better than a deeper one.

With these few elementary forms and principles great diversities may be derived as to the character, from almost the plainest to the most ornate. In the last-mentioned example, for instance, the external mouldings of the architrave, which are broader than any of the three faces, are very richly carved (although not so in the representation of the vault); and there have been many examples in which the mouldings are bold and numerous, while the rest of the architrave is a single plain and broad surface. In addition to the above, there are many other parts which enter into the composition of window-dressings, and among them is the proper relation of one to another in respect to the whole. Some critics have urged objections against the pediments to windows, as being contrary to strict propriety: hypercriticism of that kind might be directed against the general character and expression of the building, and the character and expression more or less depend. It is enough for us that the application of the pediment form to such purpose is so fully established that no idea of incongruity attends it, and that, considered with regard to its artistic effect, it contributes to variety in various ways. At the same time we cannot admit as legitimate more than two distinct varieties of it, namely, the angular, and the curved or segmental; for as soon as we begin to disturb the outline, we violate the principles of the style. 

Boiler pediments, scrolled-shaped ones, &c. are therefore to be put into the same category with twisted columns and other extravagances of that kind, which, so far from displaying invention, rather betray sterility of ideas, and the tendency to attach the least attention to anything which the least educated taste rejects as vicious. Even segmental pediments ought to be very sparingly introduced—perhaps only for the sake of variety, in alternation with angular ones, they being in themselves rather heavy in appearance. One great value of the pediment as a decorative feature of windows is, that its sloping lines contrast with those of horizontal mouldings, and occasion variety of outline in the general form of windows; and that such addition serves to distinguish and give due importance to the windows of the principal floor of a building, to which, in good composition, they are generally confined. In the Palazzo Farnese both the upper rows of windows have pediments; the first alternately angular and segmental, the other, the French cornice to the very great space over the windows, the numerous pediments do not seem to overload the design, as would be the case if the upper ones were to come nearly immediately beneath the superior cornice.

Window pediments are almost invariably supported on consoles, which, besides admitting of very great variety of detail, give rise to a mode of extending the dressing on the sides of the aperture by an external border, formed of a console, pilaster or console-jamb, the console being affixed to it; and which is either quite plain, or panelled and otherwise enriched, according to the degree of decoration aimed at. The annexed cut serves to illustrate both modes, one half of the window having merely a console, the other as
other instance just mentioned, and also in the front of the Clubhouse Chambers, Regent-street, though there are columns to the windows, there is a very sorry entablature to them—neither architrave nor frieze, but merely a plain lintel in lieu of them, without mouldings of any kind, which, besides being offensive and lumpy and heavy, look mean in what professes to be decoration of a superior kind.

That cryatides may be substituted for columns as decorations to windows, especially where an extraordinary degree of magnificence is aimed at, follows as matter of course. Indeed hardly can figures of that kind be introduced so well in any other way into exterior architecture; and though a front might be overdone by too much of such decoration, there is little need for cautioning against excess in that respect, there being no danger whatever of its being committed: on the contrary, we have hardly an instance of it.

When windows are round-headed, or arched, they are usually treated like arcades, with imposts and archivolt mouldings, either with or without keystones, plain or enriched; and they also admit of loftier proportions, since the arched head may be in addition to what would else be the height of the entire aperture: consequently so far from the form of the head in any degree diminishing the quantity of light admitted into a room, it increases it by being an extension of what the opening would otherwise be:—which, however, depends greatly upon circumstances, and whether the line of the impost or the crown of the arch would else be the top of the opening. Arch-headed windows are sometimes enclosed within a square-headed dressing, a mode of composition frequently practised by Bramante and others of his period, and of late again brought into use in Germany. It is one that admits of very great variety of design, and of much enrichment also, accordingly as the spandrels of the arch are left plain or filled up with foliage or other ornament. The ground-floor windows of the Pinakothek at Munich are of this description; and where it is desirable to keep up a degree of general uniformity between square-headed and arched windows in the same design, it may be done by giving square-headed dressings to the latter. (Fig. 2.) It is, in

We now come to another mode, quite distinct from any of the preceding, namely, that which consists in applying a small order either in columns or pilasters, with a regular entablature, sometimes with the usual architrave also surrounding the aperture of the window, at others not. And though some object to such microstyle compositions, as being inconsistent with the original purpose of columns, their impropriety is at least redeemed by richness and beauty. At all events, the impropriety is not so great as that of applying small orders successively to the different stories of a building, thereby rendering diminutive, parts which, if introduced, ought to be proportioned to the entire edifice; whereas, in the case of columns to windows, they show themselves to be intended only as decorations, and though really small, yet being distinct and independent features, instead of giving an air of littleness to the entire composition, they rather give greater dignity and importance to the windows. As to the actual effect produced by them, that depends upon the judgment and taste with which such decoration is applied. Windows of this kind are certainly not suited for any except asylar composition, since if there be also a large general order to the facade, while the columns to the windows look rather insignificant by comparison, there is too much of repetition and monotony, and the whole decoration seems nearly of columns of different sizes. Still worse is the effect when, as is the case with the Atlas Office, Cheapside, London, the building consists of more than one order, because then, as the windows must be large in proportion to those orders, the columns to the windows cause the others to look petty, and the whole to appear both crowded and confused—a defect most strikingly exemplified in the structure alluded to, nor is it at all diminished by the windows to both the upper floors being columnated. On the contrary, Barry's two clubhouses in Pall-Mall are truly beautiful examples in regard to windows thus decorated; for there they are treated in a most masterly manner, and applied with the happiest effect, and so as to produce a solicitous union of sobriety and simplicity with a very high degree of decoration. Instead of being mere copies, those windows are original and admirably studied compositions, beautifully and even elaborately finished, whereas in the}

P. C., No. 1736.

fact, not unfrequently done in the case of niches, if any internal decoration at all is bestowed upon them. There is besides, another, but exceedingly vicious mode of putting an arched window between columns and beneath a pediment, cutting away the entablature, and sometimes even cornice, so as carry the arch quite into the pediment.

Directly contrary to the preceding is that of enclosing a square-headed window within an arch, as has been done by Mr. Barry in the south front of the Travellers' Club, Vol. XXVII.—3 M
WIN 450

WIN

whereby it resolved to break this now, the columns
or, if there be none, the architrave is continued beneath
the aperture; or else the bottom of the window has a
distinct sill, either plain or moulded, and sometimes
supported on blocks or small consoles.

Though balustrades to windows were very seldom
employed beneath the architrave, or at the
architrave in Pescara and Fontaine's collection—there
are a great many examples of it in Pescara itself
and by Palladio, and also by ourselves for the principal-floor
windows in the Strand front of Somerset House, balustrades
are placed beneath both windows, and even in the window
not only beneath the windows, but on each side of them,
between their pediments and those of their order; whereby
confusion rather than richness is produced. Neither is it
advised to put balustrades, as Palladio has so often
done, beneath the windows without window dressings, since
this causes them to appear still more unfinished than they else
would. Still worse is it to apply them to mezzanine or square windows; for in such cases the balustrades and the
windows become quite out of proportion to each other, and
the whole effect is thereby most ungracefully lost.

One-halftone figures of the blemishes of Holkham, where it is accompanied
with another offensive solecism, namely, the putting a
corner above the window, leaving a space between the two, as
detrimental to effect; there is cut away—a
startling sort of economy, and quite contrary to the natural
principles of decoration which have been here pointed out,
and which teach us that embellishment ought to come
by finishing up the aperture itself, before any additional
work is done to it.

Circular windows, or oval ones, either oblong, as at
Somerset House, or upright, as at Buckingham Palace, are to
be avoided even for mezzanines and attics, since however
beautiful such forms may be considered in themselves, they have been so unfitted to the building as to appear
both fanciful and uncouth when applied to it.

Something yet remains to be said in regard to compound
or triple windows, which, besides contributing to variety in external design, are sometimes required by circumstance.

The kind of windows usually practised,
that familiarly known by the name of Venetian windows—
although there are very few instances of it in Venice itself
and divided by columns into three openings, the centre one of
which is both considerably wider and loftier than the other two, because, being arched, it has, in addition to
the arch itself, the depth of the horizontal entablature over
the columns and lateral openings, and from which the arch springs. When well composed, windows of this kind have
a peculiar rich and elegant appearance, besides the
importance they acquire from their greater size; but all de
pends on the taste shown in the particular design. If the
lateral openings are too wide—that is, half the width of the
centre one, the composition becomes sprawling and poor;
and if too narrow, by which means the columns be kept narrow, not much wider than the diameter of the columns themselves, the whole has with greater
compactness greater richness also. Kent has given us
some good examples of this kind, as in the Park front of
the House and the pedestal so high that the columns be kept narrow, not much wider than the diameter of the columns themselves, the whole has with greater
compactness greater richness also. Kent has given us
some good examples of this kind, as in the Park front of

Let AB, A'B', parallel to one another, represent the direc-
tion of the wind; WBX, W'B'X', also parallel to
another, two points is in all positions of the sail when
the pressure of the wind is made to move so that B', B
are in a line perpendicular to AB. Now, if it is supposed
that A'B' is the space described by a particle of air while B
will move to b (or B' to B') in the same direction—one direc-
tion of the wind; the lines AB and A'B' will, respectively, represent the velocities of the wind and sail in directions parallel to A'B', while BB will
be the velocity of the sail in the direction of this line.
Draw AC, perpendicular to WX or WX', produced
and meeting the one of the line in C; then AC and CO will
be respectively the velocities of the wind and sail perpen-
dicularly to the line WX or WX', and consequently AC will
be what is called the velocity of the wind in the sail.
Therefore, the pressure of a fluid being proportional to the square of the velocity, the pressure in the wind in the direction $A'C$ will vary with $A'C^2$; and this being resolved into the direction $A'D$ or $BB'$, will be expressed by $A'C$ or $A'D$, or $A'C$ sin $BB'$.

But $A'B'$ being constant, $A'C$ varies with sin $A'BC$; therefore the effective pressure of the wind will vary with sin $A'BC$ sin $BB'$.

Let $A'B'$ be represented by $a$, $BB'$ by $\theta$, $A'BC = \alpha$, and the expression for the pressure becomes

$$\sin^2 (\alpha - \theta) \sin \theta.$$

Making the differential of this expression equal to zero, and reducing, we have

$$\tan (\alpha - \theta) = 2 \tan \theta,$$

when the pressure is a maximum.

Draw $BX$ perpendicular to $BC$, so that $BX$ and $XY$ may respectively represent $\tan (\alpha - \theta)$ and $\tan \theta$; and let $AB'$, $BB'$ be respectively represented by $v$ and by $\theta'$, then

$$v = v' \cos \theta', B'X = v' \sin \theta',$$

$$XY = (2vX) = 2v' \sin \theta, \text{ and } BY = (3B'X) = 3v' \sin \theta.$$  

Assuming, draw $YZ$ perpendicular to $BB'$, or parallel to $A'B'$; thus:

$$B'Z = B'Y \cos BB' = 3v' \sin \theta',$$

$$YZ = B'Y \sin BB' = 3v' \sin \theta \cos \theta,'$$

and

$$B = v' - B'Z = v' - 3v' \sin \theta' \cos \theta.$$  

But by similar triangles, $BZ : \theta' : BB', B'A', that is, $v' \sin \theta' = 3v' \sin \theta \cos \theta,$

whence $v = 3 \sin \theta = 3 \sin \theta' \cos \theta' = \cos \theta.$

Multiplying each term by $v$, and for $\theta'$, the first term, substituting its equivalent $v^2 \sin \theta' + \theta' \cos \theta'$, we have

$$v^2 \sin \theta' + \theta' \cos \theta' = 3v' \sin \theta \cos \theta' = \cos \theta.$$

or $v = 3 \sin \theta = 3 \sin \theta' \cos \theta' = \cos \theta.$

We obtain this result by Mr. Smeaton, that the velocities of the sails at their extremities are often much more than twice as great as that of the wind. From several experiments which were made on a great scale by the same engineer, it was found that the effect is very advantageous when the inclinations of the axis, or the direction of the wind, with a section of the sail taken perpendicularly to the revolving arm at different distances from the axis, as were in the following table:

<table>
<thead>
<tr>
<th>Distance from the Axis</th>
<th>Velocity (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At one-sixth of the arm</td>
<td>72</td>
</tr>
<tr>
<td>At one-third</td>
<td>71</td>
</tr>
<tr>
<td>At one-half</td>
<td>72</td>
</tr>
<tr>
<td>At two-thirds</td>
<td>74</td>
</tr>
<tr>
<td>At five-sixths</td>
<td>77</td>
</tr>
</tbody>
</table>

And this is his experiment.

Mr. Smeaton found also that when each sail is broader at the further extremity than near the centre, the effect is greater than when it has the form of a parallelogram; and that the most advantageous breadth at the extremity is one-third of the length of the arm.

There is a certain limit to the quantity of sail which a windmill can carry with advantage; and from Mr. Smeaton's experiments it results that, when the surfaces of all the sails exceed seven-eighths of the area of the circle described by each arm in one revolution, the velocity is diminished; probably from the want of sufficient openings by which the wind, after impact, may escape. Mr. Smeaton also found that the ratio between the velocities of windmill sails when unconnected with the machinery, and when loaded so as to produce the maximum effect, is variable, but, in general, that ratio is as 3 to 2. The velocity of the sails when the effect is a maximum varies nearly with the velocity of the wind.

The form and position of the sails remaining the same, the load or resistance when a maximum, varies nearly with the square of the velocity of the wind; and the maximum of resistance which sails of similar figures, and in similar positions, will overcome at a given distance from the centre of motion, will vary with the cube of the radius or arm of the sail.

WINDSOR, properly called New Windsor, is a parliamentary and municipal borough, on the banks of the Thames, in Berkshire, 22 miles from London. It derives its importance, and perhaps its origin, from having been a favourite residence. A party of the kings of England, into the Conquest. The Saxons kings had a palace at Old Windsor, called Windles-odra, or Windleshorn, from the winding course of the Thames in this part, and Edward the Confessor occasionally kept his court there as a distinct parish, about two miles south-east of New Windsor.

In the reigns of William the Conqueror and William Rufus Windsor Castle was a military fortress, and it is doubtful whether they used it as a residence. Henry I. enlarged and improved the castle, and held it in person from this time it was the frequent residence of the king, in consequence of which New Windsor received many marks of royal favour. From having been a chapel in the parish of Clewer, it was constituted a separate parish. Edward I. made it a borough in 1277, and it returned two members to parliament: probably through the indulgence of the king, it was allowed for above a century to omit making returns; but from the 26th Henry VI. (1447) it has regularly returned two members. Edward IV. granted the boroughs of Burgess Hill and Royston.

The limits of the municipal and parliamentary boroughs are identical, and comprise the whole of the parish of New Windsor, with the exception of the small hamlet of Dedworth, which is separated from the town by an intervening parochial district. A part of the parish of Eton, to which the town of Windsor has extended, is comprised within the borough; and on the passing of the Reform Act an extra-parochial division, called the Lower Ward of the Castle, containing the residences of the Duke of York and the Duke of Devonshire, was incorporated.

Windsor was made part of the borough. Though situated on opposite banks of the Thames, Windsor and Eton form in appearance but one town, the line of houses being interrupted only by the bridges. Eton was erected in 1524, 200 feet long and 26 wide, and consisting of three arches. Windsor is pleasantly situated on rising ground, and consists of six principal streets, well paved, and lighted with gas, besides a number of smaller streets of rather mean appearance. The watch is very defective. The population of the parish, in 1841, was 7528, including 101 in the hamlet of Dedworth. The borough contained 1072 inhabited houses, and the population was 7786, but this included 789 males and 124 females in the infantry barrack, soldiers on guard, 11 persons in the gaol, and 150 strangers. The number of persons in the Castle (Windsor Castle, Upper Ward, extra-parochial) was 30 males and 56 females; in Windsor Castle, Lower Ward, and extra-parochial, 1244 males including 44 persons in barracks at the Hospital. The number returned in the borough as born in the county was 3076, and elsewhere 4710, including 512 born in Scotland and 900 in Ireland.

Prior to the passing of the Municipal Reform Act in 1835, the corporation was governed by a charter granted in 16 Charles II., under which it consisted of the mayor and nine other chief burgesses, or aldermen, three bachelors, and fifteen or seventeen younger brethren, who were elected by the higher class in the city, and re-elected, there are six aldermen, one of whom acts as mayor, and eighteen councillors. The borough is divided into two wards, and the number of burgesses on the borough register was 569 in 1836, and 616 in 1837. There is a separate commission of the peace for the borough, and offfenders are committed to the borough gaol. In 1840-41 the ordinary municipal expenses were—police and constables, 660l.; administration of...
justice, 1704; gaol, maintenance of prisoners, &c. 100l.; allowances to municipal officers, 37l. 4d. In the same year the receipts under the head of rents, fines, or licenses, was 542l.; tolls and dues, 20l. 1l.; borough and gaol rates, 67l.; miscellaneous, 24l. 1l.: making, with other items, a total of rather less than 1,000l. The corporation assurred the exclusive right of voting in the election of members of parliament, but it was afterwards extended to all the inhabitants paying scot and lot. The greatest number of electors polled at any election during the next hundred years before the passing of the Reform Act was 363: in 1830-40 the number of parliamentary electors for the borough was 667.

The public buildings of Windsor (exclusive of those pertaining to the Castle) are not in any way remarkable. A notable exception is the Hall, which will be found in the next chapter. [WINDSOR CASTLE.] The Lower Castle Ward is divided into two parts by the Collegiate Chapel of St. George, which stands in the centre. A chapel dedicated to St. George, for the service of the Order of the Garter, was erected at Windsor by Edward III. (1327-77); but the present edifice was begun by Edward IV. (1461-83), and was not completed until after the commencement of the sixteenth century. It is one of the most beautiful specimens of ornamental pointed architecture in this country. The noble proportions of the interior, the richly-carpeted roof, the painted windows, the banners and escutcheons of the Knights of the Garter overlooking their carved stalls, within which are fixed the armorial bearings of these illustrious Commanders, are all from the times of its founder, Edward III., alike impress the mind with a sense of beauty and powerfully seize upon the imagination. The great east window is painted after the designs of West; and over the altar is one of West's best productions. The Lady Chapel of St. George (in which the last Princess Charlotte is interred) in St. George's Chapel. Edward IV. is buried here, beneath the steel tomb executed by Quintin Mates. Henry VI. lies under a plain marble in the opposite aisle. Henry VIII. and Charles I. are entombed under a common tomb. At the south end of this passage communicating with the tomb-house, in which George III., George IV., William IV., and others of the present royal family are interred, St. George's Chapel is a collegiate establishment. The chapter consists of a dean, eight canons, and six minor canons; and its gross annual revenue, for the three years ending 1831, averaged 22,475l., net income 19,380/. The old church was pulled down in 1818, and the present edifice was completed, in 1822, in the latest pointed style. The building is a specimen of ecclesiastical architecture, with the gift of the crown, valued at 400l. a year. That are places of worship for several denominations of Dissenters. The guildhall or townhouse, erected in 1688, is rather a handsome building, supported by pillars and arches of Portland stone. There is a number of portraits of the English and personages of rank in the hall or courtroom; and externally, at each end, there is a statue of Queen Anne and one of her consort Prince George of Denmark. A free-school was erected in 1706, and is partly supported by endowments. The charitable institutions comprise Brotherton's hospital, founded in 1503, for eight poor persons; Reeves's almshouses, founded in 1676; besides a dispensary, lying-in hospital, &c. There are barracks for infantry and cavalry, the latter in Clewer park. The little town of Eton is placed near the river and is situated in the midst of the village. The Castle is surrounded on two sides by the Little Park, a very antient and beautiful domain, which at one time formed part of Windsor Forest. Within its precincts is Eton College Lodge, now occupied by the Duchess of Kent: the grounds comprise 600 acres, and a rich park is laid out with great taste. In the reign of Queen Anne that part of Windsor Forest which remained the property of the crown, under the name of the Great Park, was ceded to the Earl of Pembroke, and the Castle by the private proceeding of the same queen, and it was therefore determined to buy as much land as might be required to complete an avenue from the Castle to the forest. This is the present Long Walk, generally considered the finest thing of the kind in Europe. It is a perfectly straight line, above three miles in length, running from the principal entrance to the Castle to the top of a commanding hill in the Great Park called Snow Hill. On each side of the road, which is slightly raised, there is a double row of stately elms, now in their maturity. The view from Snow Hill is very fine. In 1632 a colossal equestrian statue of George III. was erected on the highest part of this hill. The total elevation of the statue and pedestal exceeds 50 feet, and the statue (man and horse) is 26 feet in height. The walks and drives in the Great Park present scenes of great beauty and variety. At the southern extremity of the old park, where the river Thames is longest in length, forming the north side of the great quadrangle. Fortunately this has been preserved, owing perhaps partly to its situation, for, although a mere 'bit', it is a singularly fine one, and a noble specimen of palatial architecture in that particular style.
During the three following reigns no additions were made. The reign of Elizabeth, on the contrary, forms almost an epoch in the architectural history of the Castle, because, though she did not domineer in it, in the way of building, except annexing to the portion added by Henry VI, that which is distinguished by the name of Queen Elizabeth's Gallery, she first caused the terraces to be formed, thereby giving to the royal abode of Windsor what is not the least striking or least attractive of its characteristics. Under the Stuarts no work was done until the Restoration; when the Castle began to be modernized, and in such a tasteful and insipid manner as to have no quality of style of any kind, and no grandeur but what was derived from mere size. The principal addition made by Charles II. was the St. George's Building (containing the State apartments, shown to the public); and no doubt this was a very great improvement as regarded the accommodation required for courtly parade. The rooms were sufficiently spacious and lofty, with large arched windows, commanding an enchanting prospect; but in themselves they had little of architectural character and embellishment, except what they derived from the pencil of Verrio. In saying this, we are aware that we have what may seem very strong authority against us, a very different opinion being expressed by the author of the interesting and valuable description which accompanies the Illustrations of Windsor Castle, edited by H. Ashton, Esq. After observing of the rooms generally that they were 'in a style of architecture which may amuse, and doubtless succeed in what is called its want of purity,' he adds, 'the ceilings especially were decorated in the noblest style at has ever been devised.' Without reference however to execution and the degree of talent, or the want of it, so manifested, we maintain that every line of the whole building and decoration is decidedly unarchitectural in its effect. What precise share Sir C. Wren had in the improvements of this period is not stated; but where further additions were afterwards completed by William III., he recommended that all the buildings on the south side of the Upper Ward, as far as midway of the Keep, should be replaced by an entirely new and uniform range to be erected, forming a regular ensemble externally composed of a projecting centre and wings. This scheme however was dropped; nor is it perhaps to be regretted, as it would have added Hampton Court, or else what was then done might have stood greatly in the way of further improvement.

The first two Georges did nothing for Windsor; George III., on the contrary, much, if only by restoring the interior of St. George's Chapel (1787-90), which, little as the execution of Gothic was then understood, was done in so judicious a manner, by scrupulously following the original details, that it requires no experience to detect inaccuracies. Sad mischief however was done by removing the mullions and tracery of the east window and those at the west end of the aisles, in order to fill them up with plates of glass, after designs by West. In 1790 James Wyatt was first employed at Windsor, and Gothicised the Star Building and the corresponding portion on the north side of the inner quadrangle as far as St. George's Hall. He also fitted up the state staircase in the same style, and did something to better the domestic arrangements of the interior; but the improvement, such as it had been, stopped, while what had been done produced little other effect than that of making the rest of the Upper Ward and buildings towards the terraces appear meaner than before. Still it was fortunate that the works were interrupted, for had they been carried on till the whole exterior of the presence portion of the Castle had been completed in the same style and on the same scale as then begun, Windsor Castle would have been greatly inferior to what it is now.

Excluding beauty of situation, the Castle had nothing whatever to recommend it as a residence. The whole of the east and south sides, the portion being immediately in view from the new place, was singularly inconvenient in every respect, and also exceedingly confined in its accommodation. The rooms, and those for the most part of the courtiers being no other communication got out from them on the sides that point of communication (which is what the Frenchmen always call the 'troue') to the battlements.
delicious wine, has scarcely a quality, except durability, like that of the original.

Some local produce effects which are alike inexplicable and inimitable. These, though generally attributed to the soil, are not always or solely owing to its composition and qualities. In some instances the soil is the main cause of difference, as seen in the Constancia of the Cape. The climate there is most favourable to the growth of the vine, yet in one small space only is a tolerable wine produced, the two contiguous farms of the Great and Little Constancia, yielding, the former the red sweet wine, the latter the white Constancia; the soil on which the vine is decomposed and grown: Whereas the precipitate difference of soil can be point out, differences arise from the cultivation of a different kind of grape. Under the article Vins (vol. xxvi, p. 398) it is stated, on the authority of Meyen (Pflanzen-Geographie, p. 432) that there are instances of the same variety of wine being planted on the side of a hill or mountain, and the wine which is the produce of the grapes from the highest part of the mountain will differ essentially from the wine which is the produce of the same grape from the lower part of the mountain. The wines known by the name of Johannisberger and Rudesheimer in Germany are the produce of vines growing close together, and resembling each other in external characters. The vineyards also that produce the Loheberger and the Sud are very similar to each other. It is probable that this difference is owing to the composition of the soil. This is not altogether correct. Johannisberger is only 150 feet above the level of the Rhine, and it is quite certain that the produce of the vineyard at Leistenwein, which is near the city of Johannisberg, of a quality vastly superior to the produce of the place called Johannisbergerhöhl, not from any peculiar or insurmountable cause, but because the former, belonging to Prince Melchers, and the latter to some other proprietor, can receive an amount of skilful treatment, which the other, being divided among a large number of small proprietors, never does. This subdivision is the cause of an annual loss of many thousands of pounds. (Bronner, Die Wein- und Tafeltrauben der Deutschen Weinberge und Gärten, Heft v., t. 46, p. 113.)

The grape cultivated in both places is the little Riesling (Der Kleine riesling of some, Weisser riesling of others; the Vitus vinifera purilla of Babo and Metzger's Wein und Tafeltrauben, p. 159). It can be grown to ten feet high (which occupied ten years in building). This greatly promotes the steady progress to maturity of the grapes by securing a quissent state of the air, which is known to be extremely beneficial, and which, when imitated, produces a rich, fragrant, and agreeable vintage. The bunch of grapes with a muslin bag, forwards its ripening very much. The wine of Lugisland and the Liebfrauenmich owe their superiority over that of the neighbouring vineyards to the protection of the town-wall of Worms. (Bronner, Heft ii., pp. 18-20.)

The advantage of protection against agitation of the air is so well understood in the Rheingau, that the belts of vineyards which clothe the height of Hochheim bring very different wines, according to the direction of the wine. One morgen to the right of the river Main, brings in the market two thousand florins; a higher morgen brings one thousand florins; and one at the summit only five hundred. (Bronner, pp. 14.) The geographic character of the soil of Johannisberger is argilaceous, which is known to be of peculiary much benefit to the grape, and in one place passes into a reddish quartz, which is very hard, and stands but slowly any decomposition. This is overlaid with alluvial and alluvial deposits in most places, in south-west side from these and circumstance it follows that the soil is of a very diversified character. (Bronner, p. 116.)

The exposure is south-west, with a slope of from ten to fifteen degrees. Rudesheim is well protected by its natural position and a lofty fortification, so that it is almost impossible to be kept from being washed down only by numerous terraces, between which the air is as hot as in a conservatory. The soil is composed of stones of a dark colour, which radiate heat during the night to such a degree, that the grapes are surrounded by almost the southern climate. The grape most common, at least in the old vineyards, is the Rieseling; in the new, new vineyards of the upper Main (U.M., Heft x., t. 60), which has the property, in this story, not ground, of continuing productive till the age of fifty or more, which is not the case with any other grape. But as it only gives a good wine in very favourable years, and as the wine from the Rieseling grape brings so high a price, the new vineyards are mostly planted with the Rieseling; the propriety of this substitution is very doubtful. (Bronner, iii. 130.) These facts are sufficient to account for the differences between the Johannisberger and Rudesheimer wines.

The differences between Leistenwein and Steinwein are still more easily accounted for. The Leiste is on the right side of the Rhine Main, the Stein on the right, the Stein being the most and a large part of it is argilaceous and calcareous portions, especially fragmentary; while this is the soil commonly met with in Wittelsheim and is all Franconia. Why these two wines should differ from all others of the district is unintelligible; but the difference between the Leistenwein and the Steinwein is great. The vineyards of the Leiste (i.e. the best portion, gute Leiste) are planted in a great measure with the Rieseling and Traminer (V. v. tyroliens, B. u. M., Heft xii., t. 72,) with about a third of the Elbling grape (V. v. albula, B. u. M., Heft x., t. 72). The Steinwein is equally divided between the Traminer, called franken, by some geweldel (V. v. u. m., B. u. M., Heft ii., t. 9), i.e. both white and black. Besides these there occurs in considerable proportion the Hermitage grape, brought from France, which here succeeds to the Rieseling. This soil, regarded as calcareous, granite, the selection of the grapes, when ripe, is attended to with extraordinary care. (Bronner, vi., p. 82.)

The predominant grape of the Stein vineyard is the Elbling, mixed with a smaller proportion of the Rieseling and Hamburg grape. The Leistenwein is with justice regarded as the second finest wine of the south of Germany, but as the whole of the produce of the small space known as the gute Leiste (containing only 2 morgens towards the south-east and 2 morgens towards the north) is the wine of the Stein, it is commonly sold as a wine of Bavaria, it is scarcely known, and is seldom to be purchased. The Steinwein must not be confounded with the Steinberger wine of the Rhine.

The Montilla of Spain is the produce of a white soil (called calcarous, containing a great part of carbonate of lime, with aluminia, silica, and a little magnesia), while the Manzarella is the produce of the terrains rouges et ablo- nœux. Yet the wines do not greatly differ in taste or flavour. More importance is attached to the soil than the grape; but the climate, if anything, is better than its chemical; Chaptal was clearly of this opinion, for he maintains that, provided it is porous, free, and light, its component parts are of little consequence. Perhaps calcarous is on the whole the best, simply because it yields slightly better grape than the others. In the south of Spain, the air and climate are much more susceptible to the influence of the soil being the cause. 'In all those districts which produce wines of high reputation, some few individuals have seen the advantage of selecting a particular variety of grape, and the climate be so advantageous that the highest state of perfection of which it is capable. The same care has been extended to the making and subsequent management of their wine, by seizing the most favourable moment for the vintage—by the rapidity with which the wine is made; the climate and soil are such that the whole content of each vat may be in exactly the same state, and a simultaneous and equal fermentation be secured throughout—by exercising equal discrimination and care to those that bring off the vintage. And in its consequent treatment of wines where it is kept; and lastly, by not selling the wine till it should have acquired all the perfection which it could acquire from age, and by keeping, as the produce of their own vineyards, such wines, to confirm and maintain its celebrity. By these means have the vineyards of a few individuals acquired a reputation which has enabled the proprietors to command almost their own prices for their wines; and it was evidently the interest of
such persons that the excellence of their wines should be
imputed to a peculiarly in the soil, rather than to a system
of management which others might imitate (p. 139).

It is greatly to be wished that the truth of this
important statement were impressed on all persons having
the character of vine-growers, as it is certain by attention
to these and other circumstances quite within their control,
the quantity of good wine might be much increased and
its price lessened. Bronner distinctly states that in the
Bergstrasse near Heidelberg, by obstinate adherence to
careful and judicious practice, the produce is annually one-
third less than it might be (beh vii., p. 20).

Where some peculiar strong-smelling substance exists in
the soil, an odour is communicated to the wine which ren-
ders it unpleasant. This is the case when stinkweed (a
native of United States) is present. (p. 44) not only with fresh cow-dung, which is used at
Johannisberg, but with fragments of woolen cloth previously steeped in liquid manure and dried, which is
found greatly to augment the produce. Professor Rau
believes a vegetable cause to be the utility. The practical
value of the addition of old lees to the red than white grapes; the former every
third or fourth year, the latter only every tenth. Even
the proprietors of the vineyards near Bordeaux, which
produce the highly-prized clarets, employ manure once
or twice a year. (Paguier, Wine, 4th ed., p. 28.) But perhaps the best manure for vines is the cut-
tings of the vines themselves when pruned, as recom-
mended in Liebig's 'Chemistry in its application to Agri-
culture,' 2nd edit, p. 290.—The vines are pruned in the end
of July or beginning of August, whilst still fresh and
moist. If they are then cut into small pieces and mixed
with the earth, they undergo putrefaction so completely,
that at the end of four weeks not the smallest trace of
them can be found. These restore to the soil the alkalies
absorbed by the grapes, which are so necessary for the per-
fection of this fruit. Probably no farm, so rich in alkalies,
would answer well. But the same vines will yield a wine
having very different qualities, at least as to flavour and
perfume, in different seasons. These qualities are, in
truth, of such a variable nature, that they might be said to vary from year to year; there being perhaps no
two vintages, though collected from the same spot and
managed in the same manner, that will be found com-
pletely different in color and perfume. (History of Antient and Modern Wines, p. 135.) The cor-
rectness of this statement is proved by the varying charac-
ter of the vintages in different years, as seen in the fol-
lowing table, in which it may be observed that the season
which was favourable in the vineyard in one place, was fre-
guently unfavourable to it in another. Hence it rarely
happens that the good Port years coincide with the good
Claret years, as a heat which ripens well the grapes in the
comparatively cold climate of Medoc searches the grapes in
the warmer climate of the Douro. The close mutual rela-
tion, so often called the comet year, was remarkable for the ex-
cellence of the vintage in almost all the wine-yielding
countries of Europe.

The mode of planting, pruning, training, pruning, and
renewing the vines has a very great influence on the quan-
tity and quality of the produce. At the present time,
grow unrestrained is a sure method of deteriorating the
quality; and although the picturesque appearance of
the vines spreading in graceful festoons, a sight only to be
seen in Italy and a very few places in the south of France,
corresponds to the idea formed of a vineyard, yet all skilful
cultivators keep them low. This method is followed in
France, Germany, and Portugal; in the very sandy parts
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Elsewhere they are supported by props or trellises. The nearer to the ground the grapes are kept, the more potent is the wine; moreover the vines flower earlier and the grapes are sooner ripe, thus rendering the vintage more certain. Along the Moselle, at least in the old vineyards, where the vines are allowed to grow six or nine feet high, the wine of these vineyards is much lighter than that of the same or similar vineyard on the Moselle. At Orval, on the other hand, a very peculiar mode of training the vines is followed; and the vine there is also very light, destitute of the fiery character of those of the neighbourhood, and, being less esteemed, sells for one-half less; it is however a very wholesome wine.

If the soil be stony and of a black colour, there is great advantage in having the grapes near it, as they not only get the benefit of the reflected light during the day, which, coming on the lower and under parts of the branches, colours the fruits, and paragelie, against hail. Numerous insects infest the vine, some of which are very destructive. (See a very complete account of them by Baron Walckenenaer, in Taylor's Scientific Memoirs, vol. i.; and in the work of Költer; also Victor Audouin, Histoire des Insetes nuisans, et perturbateurs de la Pyramide, 1842.) The crop is also apt to be ruined by excessive wet, either early in spring or when the grapes are approaching maturity; the rains which fell in September, 1842, completely ruined the claret vintage of that year, which was in the process of ripening. The360 do not change for many days before the white. It is of importance to use one kind only, or, where several are used, to be careful that they reach maturity at the same time. Upon the careful selection of the grapes when in perfection depends much of the superiority of the Johannisberger and other of the most famous Rhine wines, three successive gatherings being often made, at considerable intervals. The removal of every unripe grape from each bunch is also carefully performed in the well-ordered vineyards. The stage at which the grape is fit for gathering varies. The nature of the kind of wine intended to be made. When a brisk wine is wished, such as Champagne, the grapes are gathered before they are fully ripe; and they may be collected even in foggy weather. If the dew is drained from the vines, though for all other kinds dry clear weather is proper. (Henderson, p. 15.) This author (in general so accurate) states that if the object be to obtain a dry full-flavoured wine, the grapes should be gathered as soon as they have acquired their proper maturity, and before they begin to shrivel or wither on the stalk. But in the case of the most esteemed German wines, which are the driest of all, the gathering of the grape is postponed as late as possible, by which many free acids are got rid of, and the wine at such a period of keeping is so soft and delicate, that the new wines are preferred to the extremely old wines, which were in great request previous to the adoption of the plan of late-gathering. Thus at Johannisburg the vintage of 1831 was very late; that of 1831 did not come on the market till the 17th of November; and in 1834 the grapes were all hanging on the vines, but perfectly sound, so late as November. Yet these are among the most renowned vintages of the present century.

In the warmer parts of the south of Spain and of France, and also at Tokay, where wines de liqueurs are made, the grapes are allowed to remain very long on the vines; the stalks are twisted, so as to prevent the influx of any recent sap; the thinner or watery portion evaporates, and the dry or shrivelled grape remains, and contains much sugar. On the Rhône a small quantity of sweet wine is made from the ripest grapes, which are hung on hurdles, or spread on straw, for six or eight weeks, or until they become half dried. The liquor obtained from them, which is called le vin de paillasse, is a straw wine (vin de paillasse). In some cases the mas is boiled; this is often done with the sheries of Spain. When the boiling is carried far, a very sweet luscious wine is produced, such as the wine of Cyprus, the malmsey of the Italians (vinum coctum of the ancients), the malmsey of Cephaloia, and the other rich wines of the Greek Archipelago.

The process pursued with other wines, though subject to modifications in the different kinds, is perhaps the best learnt from the practice pursued in the Claret country. It is universally allowed that the highest degree of skill, attention and experience is exhibited. But before giving the details it is necessary to take a view of the chemical composition of the grape and of its juice, both in the unripe and ripe states.

The grape itself has not been made the subject of rigid chemical analysis, but the juice (called verjus) of the unripe grape, and that of the ripe (termed must), has been analyzed by the following chemists:

Béard also found an odorous matter (to be afterwards spoken of), also malate of lime and super-sapum of lime.

The seeds of the grape yield the purest tannin; fixed oil exists also in the seeds and kernels of the grape, and is especially abundant in the south of France. The colouring principle resides entirely in the skin, hence the wine in the grape called Tintillas (from which the wine called tintilla of Spain is made), and which is entirely penetrated by the colouring principle. It is used in dyeing, hence called by the French leint’sur, or l’Alicant.

The juice of the grape is a subject of investigation on the colour of the grape from which it is prepared. Champagne is the produce of a red grape: red and white grapes are used indiscriminately for Sherry; but white Port is made only from a white grape.

The stalks promote the fermentation, and if they, as well as the hulls or skins, are withdrawn before the fermentation has proceeded far, it is not till some alcohol is generated that the colouring principle is dissolved, these two red grapes neither communicate colour to the wine. They are early wines from the delicate red wines of Bordeaux; but retained longer in the red wines of Portugal; hence the greater austerity and sponginess of the latter. The wine of Cahors, prepared from a grape called Auxerrois, pied de gueule, yields a wine a dead black, the colour being deepened by an admixture of a preparation called vinigone, which is merely a portion
the must of this grape, boiled for a few minutes with the strongest spirit of wine, in the proportion of one part of spirit to four of must, added to it. This extracts the colouring principle most thoroughly; and communicates not only the colour, but all the rest of the bouquet, of the Bordeaux wines, to which raugme is frequently added, a deep hue. 'The more this preparation is required and added, the less the wine will bear keeping.' (Paugerolle, p. 112.)

The wines of the Moselle may be distinguished from those of the Rhine by their being put in curvés-mères or mother-casks, to which a yellowish colour is given. At Conin, in Moldavia, a wine is prepared which is green, and which becomes deeper by time, while the strength increases so much, that it is not kept any longer in a cask. In the third or four years it almost resembles brandy, but without so readily affecting the head. 'On exposing red wines in bottles to the action of the sun's rays the colouring-matter is separated in large flakes, without altering the flavour of the wine, and the wine becomes white, or a pale straw colour, which, after three or four years it almost resembles brandy, but without so readily affecting the head. 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The wine, if it has succeeded, ought to be clear, transparent, of a fine soft colour, a lively smell, and a balsamic taste, slightly piquant, but agreeable, inclining to that of the raspberry, violet, or mignonette, filling the mouth, and passing without irritating the throat, giving a gentle heat to the body, and not causing the lower parts of the body to be heated.

It is necessary to know what is meant by the 'flavour' of wine, and what is meant by 'bouquet,' terms often confounded. The flavour of wine, called by the French sève, indicates the vinous power and aromatic savour which are felt to the air of the wine without entering the mouth, and continuing to be felt after the passage of the liquor. It seems to consist of the impression made by the alcohol and the aromatic particles which are liberated and volatilized as soon as the wine receives the warmth of the mouth, or as soon as it is tasted, or even as it is splashed on the palate, inasmuch as the latter declares itself the moment the wine is exposed to the air; it is no criterion of the vinous force or quantity of alcohol present (being in fact greatest in the weak wines), and influences the organ of smell rather than that of taste. The bouquet which by these means is given to the common or ordinary wines never replaces perfectly the natural flavour of the choice wines of Medoc and Graves. It is very easy to distinguish the bouquet from the bouquet by even moderate experience in tasting wine.

The bouquet of wine is altogether a new product, and is in no way dependent on the perfume of the grape from which the wine is made. Red wines scarcely ever retain a trace of the bouquet. (See p. 30.) In the white muscadine wines do in some degree, especially Frontignan. It has been recommended to suspend some of the ripest and most odoriferous bunches of the grapes in the cask after the first fermentation has subsided, in order to heighten the perfume. A practice long pursued in the vineyards of the Italians, and wines of the French. But if the acetic acid and amanitic acid, upon which the bouquet depends, be the consequence of a true process or putrefaction (somewhat similar to what occurs in musk, by which the scent is evolved), by the action of the elements of oxygen and sugar, this process cannot accomplish the object, and only runs the risk of exciting a hurtful fermentation. The best account of the bouquet of wine is given by Liebig, who, with Pétouze, discovered amanitic acid. It is well known that those wines and fermented liquors generally contain, in addition to alcohol, other substances which could not be detected before their fermentation, and which must have been formed, therefore, during that process. The smell and taste which distinguish wines of different periods of fermentation is similar to the smell upon an ether of a volatile and highly combustible acid, which is of an oily nature, and to which the name of amanitic acid has been given. Amanitic acid contains an equal number of equivalents of carbon and hydrogen—exactly the same proportions of these elements, therefore, as sugar; but by no means the same proportion of oxygen.

The substances in wine to which its taste and smell are owing, are generated during the fermentation of the juice of the grapes as contain a certain quantity of acetic acid; they are found in wines which are free from all acids, or which contain a different organic acid, such as acetic acid.

The wines of warm climates possess no odour; wines grown in France have it in a marked degree, but in those from the Rhine the perfume is not pronounced. The kinds of grapes on the Rhine which ripen very late, and scarcely ever completely, such as the Rieseling and Orleuran, have the strongest perfume or bouquet, and contain proportionally a larger quantity of tartaric acid. The earlier grapes, such as the Ruländer and others, contain a large proportion of alcohol, and are similar to Spanish wines in their flavour, but they possess no bouquet.

The grapes grown at the Cape from Rieslings transplanted from the Rhine, which ripen quickly into the ripened wine, which does not however possess the aroma which distinguishes Rhenish wine. It is evident from these facts, that the acid of wines, and their characteristic perfumes, have some connection, for they are always found together, and it seems to be essential that the composition of the wine should give a certain influence on the formation of the latter. Whatever opinion may be held regarding the origin of the volatile odoriferous substances obtained in the fermentation of wine, it is quite certain that the characteristic smell of wine is owing to the ripening, or a bouquet of an organic acid, resembling one of the fatty acids.

It is only in liquids which contain other very volatile acids, that the fatty acids and amanitic acid are capable of entering into combination with the other of alcohol, and thus producing two kinds of aromatic matter, which is found in all wines which contain a free acid, and is absent from those in which no acids are present. The acid, therefore, is the means by which the smell is produced; a small without its presence amanitic acid could not be formed.

On the Rhine also an artificial bouquet is often given to wine for fraudulent purposes, by the addition of several species of the sage and rue to the fermenting liquid; but the perfumes thus obtained differs from the genuine, and is known by its inferior durability; they are gradually dispersed. (Liebig's Organic Chemistry in its application to Agriculture, 2nd ed., p. 313.)

The fermentation is more prompt and lively in proportion to the quantity of must; hence the best wine is made when a large quantity of must is operated on, it is only when a very small quantity of some peculiar grape is to be fermented that small vats are ever used. In some cases, when the season is cold and the grapes are very tender, it is necessary to ripen the wine by artificial means; either adding some boiling must, or withdrawing some of the excessive water by adding baked gypsum. This last uneconomical proceeding is now laid aside in France, being succeeded by the practice that was pursued in the Rhine, where a little must is first carried on in covered vats, since in open ones only the carbonic acid escapes, by which the wine is rendered flatter, but much of the alcohol and aroma are lost, and the wine rendered weak. The length of time that the fermentation continues is the chief characteristic of the kind of wine intended to be made. The temperature influences its progress and the results. In the Champagne country, the grapes which are to fill one cask are all pressed within the space of two hours, and the must allowed to ferment in small vats, from six or twelve to eighteen hours, according to the temperature, during which it undergoes a process of spontaneous purification, becoming as clear as water. The moment when this is complete is watched for with the utmost care, as it is then drawn off into small vats, completely well sulphured (a process which is hereafter explained), and put into cellars below ground, the bunghole being left open but covered with a fine stone. The overflowing fresh, or yeast, is removed from time to time till December, when it is necessary that the wine be tasted and proved. It is then also submitted to the process of fining.

At Tokay the must is allowed to remain in the vat from twenty-four to thirty-six hours, till the first or spontaneous fermentation are made, and the wine is then divided off into small casks (which are never sulphured) and placed in a still part of the cellar. The effervescence lasts two or three months.

The fermentation spoken of hitherto is called the primary or active fermentation; but there is another kind, called the seconde or induced, which, though obviously a continuation of the former, is less attended to, but yet of great importance as relates to the ripening, keeping, and acidity of the wine. A knowledge of the cause of fermentation, and the different conditions under which it can take place, is most material to a full comprehension of the measures necessary for ripening the wine and preserving it in perfection. The subject has been fully explained in Liebig’s Chemistry of Agriculture, and a summary only can be
given here. The cause may be expressed in the following law of La Place and Berthollet:—"A molecule set in motion by any power can impart its own motion to another molecule with which it may be in contact." Fermented yeast is a body in a state of decomposition, the atoms of which consequently are in a state of motion or transposition. Yeast placed in contact with sugar communicates to the elements of that compound the same state of motion; but it does not contain enough of the sugar to arrange themselves into new and simpler forms, namely, into alcohol and carbonic acid. In these new compounds the elements are united together by stronger affinities than they were in the sugar, and therefore under the circumstances in which they were produced further decomposition is arrested.

In the juice of the grape fermentation is excited by the access of air, alcohol and carbonic acid being formed by the combination of these three things, or sweet wines. But when the process once commenced, continues till all the sugar is completely decomposed, quite independently of any further influence of the air. In addition to the alcohol and carbonic acid formed by the fermentation of the juice, there is also produced a yellow or grey insoluble substance, containing a large quantity of nitrogen. It is this body which possesses the power of inducing fermentation in a new solution of sugar, and which has in consequence received the name of ferment. The alcohol and carbonic acid are formed from the prototypical quantity of ferment from those azotized constituents of the grape-juice which have been termed gluten or vegetable albumen. Gluten dissolved in pure water undergoes a process of decomposition; but the decomposition which it suffers in an insoluble precipitate of gluten. The gluten, when introduced into a fresh solution of sugar, and retained in a vegetable juice, belong to two different kinds of transformations. There is reason to believe that its change to the insoluble state depends on an absorption of oxygen, for its separation in this state may be effected under certain conditions by the introduction of nitrogen. Different specific effects seem to be present in different fermenting fluids; hence the names S. vini, cerevisiae, and pomorum, according as it exists in wine, beer, or cider. (Schwann, P. Liebig's Vol. cxxiii. 1838, p. 66; Meyen, Report on the Progress of Vegetable Physiology during the Year 1857, p. 83; Meyen, Jahresbericht von dem Jahre 1856, p. 56; Meyen, Quaestiones, mer. 1858, f. 22; Quevénne, Journ. de Pharmacie, Juni, 1836, p. 259; and British and Foreign Med. Review, vol. ix., p. 579.)

Quevénne has found that, though the development of the fungus and fermentation are two distinct operations, whatever represents the growth of the former hinders the latter. Certain free organic acids must be present, and alkalis, which combine with them, stop completely the process of fermentation.

The knowledge of these facts will enable us to comprehend the nature and object of the practices adopted empirically for the preservation of wine; above all, of those which are requisite to prevent it passing into the state of acetic acid, to which the wines of northern countries, or poor weak wines, are most prone.

The whole process may be simply expressed thus. Grape-sugar is a compound of carbon, hydrogen, and oxygen. In the action of fermentation the relative proportion of the atoms is disturbed, owing to the presence of an ex-cit-er (ferment), by which certain new compounds are produced (the former in a great measure flying off in the form of gas), the result being a diminution of the atoms of carbon and oxygen:

Three atoms of sugar = 3 atoms hydrogen, 3 atoms carbon, 3 atoms oxygen, decomposed;
One atom of alcohol = 3 atoms hydrogen, 2 atoms carbon, 1 atom oxygen, formed.
One atom of carbonate of sodium = 1 atom carbon, 2 atoms oxygen, formed. (Acocol.)
So long as any sugar is present, the power of the gluten (exciter) is exercised in converting it into alcohol; but no sugar remaining, its energy is directed to the alcohol, which is changed into vinegar by acquiring one atom of oxygen; yet not immediately, as is frequently stated, but through the influence of aldehydes, which is alcohol deprived of two atoms of hydrogen, the hydrogen being oxidized into water.
dised at the expense of the oxygen in contact with it, and the same is true of the aldehyde, having a great affinity for oxygen, combines therefore directly with it, producing acetic acid. The formula for these is as follows:

Grape-sugar . . . C12 H14 O14

This contains exactly the elements of four atoms of acetic acid gas and two atoms of alcohol.

The formation of acetic acid from alcohol consists of two stages: 1st, the abstraction of hydrogen, by which aldehyde is formed; and, 2dly, the addition of oxygen, by which acetic acid is produced. Alcohol gives by reaction:

\[ \text{Aldehyde} \text{C4 H4 O2} \]

and this gives by:

\[ \text{C4 H4 O2} + O \]

Hydrated acetic acid.

\[ \text{C4 H4 O4} \]

Or hypothetical dry acetic acid

\[ \text{C4 H4 O3} \]

(Kane's Elements of Chemistry, p. 896, etc.)

The one atom of hydrogen taken from the aldehyde has combined with one atom of oxygen to form water, which also results from the process. Hence the necessity of excluding the atmospheric air, as the chief source of oxygen; or introducing some other element with which the oxygen more readily than the aldehyde can do; or keeping the alcohol at a low temperature, which is adverse to this combination. These various objects are attempted to be accomplished by racking, sulphuring, fining, racking, bottling, and keeping the wine in casks at the temperature of the air.

It must be obvious that the employment of these means is directed against the occurrence of the acetic fermentation, which mostly happens to cause the spoilage of the wine, and altogether unnecessary, since, so long as the vinous fermentation is going on, i.e., as long as alcohol continues to be generated, the wine is gaining in quality. Once begun, the presence of atmospheric air is nowise necessary for the continuation of the vinous fermentation; the more thoroughly it is excluded therefore, while the vinous (insensible) fermentation, by which the wine is ameliorated, goes on, the acetic fermentation cannot commence.

This probable extract from Liebig, it appears, that while the azotised matter (gluten) in grapes, wherever grown, is a fixed quantity, the acids and saccharine matter are variable. When there is more saccharine matter, as in Rivesaltes, Frontignan, and Tokay, than is introduced into the juice to transform into alcohol, a portion of the undecomposed sugar remains, sufficient not only to give that taste which has acquired for them the name of sweet wines, but also to exert the usual preservative power of sugar, when present in large quantities, and resist decomposition. Thus Muscadine wine has been kept two hundred years; Mountain, buried at the time of the fire of London, and disinterred in 1811, was excellent; and old Tokay, called vino extrasenso, is in perfection at the end of a century. This wine needs neither sulphuring nor adding to it, as fine Scharlau, Ungarn Weinbrand, eerst band, p. 79: the casks are hermetically bunged. And the reason is obvious. To the juice of grapes grown in colder climates or cold seasons, sugar, especially starch-sugar, is added at the beginning of the fermentation, in order to consume and the leaven. Also to wine which it is apprehended is about to become sour, or pricked, as the first sign of its becoming acetic is termed, sugar is also added; but if vinegar has really been formed, this introduction of sugar, so far from hindering, only hastens the further transformation, as the presence of vinegar is the most powerfully disposing agent to this.

When a dry wine is wished, it is necessary that all the sugar should be transformed into alcohol. To do this the wine is racked to time, and by rote or racking, or by returning it to the lees to feed. As the wine contains variable quantities of undecomposed gluten in solution or thrown down to the bottom of the cask, it is only necessary to stir up the lees to re-oxidise the fermentation.

But lest the point should be passed when the vinous fermentation is nearly complete, and the acetic would begin, all the undeveloped ferment is removed. Most of it remains in the vat in which the first and final fermentation takes place; while the ferment put in casks, these are generally kept nearly full, by frequent additions of fresh juice, so that much of the ferment works out at the bung-hole, which is seldom perfectly closed for two or three months. Racking is practiced for various wines, as often by three times in the year. This consists in transferring the wine to a fresh cask. It is in doing this that the practice of sulphuring is most adopted. It consists in burning sulphur-matches in a linen steeped in sulphur in the cask, previously rinsed with which all the oxygen of the air is consumed, and a quantity of sulphurous acid produced. This must be carefully done, as, if in excess, the wine acquires the taste of sulphur, which it would keep some time. While wines require most sulphur, especially a pipe of wine, it is principally given immediately to the exhausted cask, otherwise it will speedily get filled again with common atmosphere. Dr. Mc-Culloch recommends the following method, the remarks that by the common method of tapping a scarcity is impossible to draw the sufficient portion of the lees with it:—To effect it, a cock is introduced into the full cask at the usual place of tapping, three or four inches above its bottom, from which a large hose (a flexible esouche) would be introduced into the bottom of the cask. A couple of bellows may then be so fitted to the bung-hole of the full cask as to force by its action the whole of clear liquor through the hose into the empty vessel; this means the least possible disturbance to the wine, as the wine is at the same time preserved from the injurious contact of atmospheric air. (p. 120)

The whole of the wine should not be drawn off, as the cap frequently contains principles which would render it useless for future purposes. A small portion is left in the cask, to form either brandy or vinegar, according to its kind and value. Another means may be used, instead of sulphuring, to prevent the acetic fermentation, viz. the use of potash. A dram of this is sufficient to stop an impatient yeast, and the use of both agents consists in absorbing any trace of oxygen and preventing it acting on the organic substance. Volatile oils have the power of checking the vinous fermentation, but their odour is a practical obstacle to their employment. They probably are the product of the growth of the fungus (Basaccharomyces vinii) formerly spoken of. Alkalies, combining with the free acids, the process of which is essential to the process of fermentation, hinder it, but as they are destructive of the quality of the wine, they are not employed. The use of man- ganase, though recommended by Dr. Mc-Culloch, should never be used for wine where sulphuring has been employed, as it would most readily give off oxygen.

It must be obvious that racking can only bring the wine from matters which are laid bare, and to be either deposited among the lees or floating on the surface. In order to get rid of some other matters held in solution a different practice is adopted. This constitutes the process of fining. It is in all wines of value, and this continued practice is employed for this purpose. The quantity of the wine-finishing is in proportion to the quantity and quality of the wine, as also to that of the material. The common and new wines require more tannin; the old wines require less. The more the fining of the tannin extracted from the seeds of the grape, the glass has no influence in purifying them. If kept in old casks however, as is always the rule in France, they extract tannin from their sides. Numerous processes of improving wines, as well as the permanence of keeping improving wines, are detailed in Jullien, Manuel du Sommelier. The process of fining is always repeated previous to bottling the wine.

At Bordeaux the white wines are generally ready for the first fining or filtering from January to March; the second racking is to prevent the working which the great heat of July and August might occasion in them; and the third in October, before the cold comes on. A favourable state
of the weather must be chosen for these processes; that is, when it is fine and clear, and when the winds are in the north-west, north, or east, because the wine is finer and clearer then than in rainy weather. (Paganiserre, p. 56.)

A Sherry, the unsurpassed produce of one vintage, may now and then, by a rare chance, be obtained. It is difficult to give any rules for the mixing of wines, as the taste and expediency of the maker are the only guides to be depended upon. It generally happens that when two distinct wines are mixed, the process of fermentation is not properly completed, or the process of evaporation, in technical language, is not carried to a proper extent; two casks of very different ages are therefore chosen, in which one or both of the wines to be thus mixed are either in a state of renewed fermentation or show a tendency to it. The wines being then proofed, or as the French term it, the fermentating regenerator, a strong fermentation is excited, which is still further assisted by agitation. When this process, which is conducted with the precautions formerly laid down for the treatment of close fermentation, is completed, the wine is more or less one durable and homogeneous liquid only in consequence of this fermentation. A sense of the quantity of each wine which is to be used, and a proper mixture of the wines, or, if any difference of opinion is to be decided upon, a proof of their sound condition.

A Sherry, the unsurpassed produce of one vintage, may now and then, by a rare chance, be obtained.
Cellars and vaults should be as remote as possible from streets and other ways by which waggon pass, the vibrations caused by these often disturbing the more delicate wines.

When wines have been kept in the wood for the period which experience has fixed as that proper for attaining maturity, they are generally put into bottles or flasks. In these some further change goes on, by which they are still further ameliorated. In many red wines a deposit occurs, forming a crust on the lower side of the bottle.

The operation of bottling should take place in fine weather, if possible in March or April. Before this is done the wine must be fined, either with white of eggs, very fresh, or isinglass; after which the cask must be left to repose ten or fifteen days, according to the weather. The bottles must be perfectly clean, and if not new, care must be taken that no lead-drops remain in them, as these spoil the wine and render it deleterious.

The corks should be perfectly sound, and as elastic as possible, so that when driven home they may expand beyond the contract part of the neck of the bottle, and through those objects which as well as to protect the corks from insects, the mouth of the bottle is often dipped in melted wax. If gum eelli is an ingredient in the wax, insects are less prone to attack the corks. But the wine within often corrodes the cork; this is particularly the case with Madeira and all sweet wines. Such also are most liable to the aggressions of insects, and must frequently be recorked. All these inconveniences, as well as the serious loss of wine resulting from them, are likely to be got entirely rid of by the use of the patent lead-drops stoppers, which besides being in the first instance cheaper than corks, can be often used a second time; they seal hermetically the wine, to which they are incapable of communicating either taste or colour, and are not subject to the attacks of insects. For Champagne, which is always placed in corks, these offer great advantages. As Champagne is bottled after remaining at longest only three years in the cask, considerable deposit takes place in the bottle. When recorked this is got rid of, and the wine is thus rendered 

The neck; the cork is withdrawn, some of the wine rushes out, carrying before it the lees; the escape of the rest is hindered by an adroit adaptation of the fore-finger. To fill up the vacuole caused by a wine which has escaped, a solution of sugar-candy in any of the common red wines of the country is added: the permanent cork (or the caoutchouc stopper) is now introduced; when the latter, a simple but convenient piece of mechanism is used: it is then wired down, and finally covered with tin-foil. If preserved in a cool cellar, good Champagne may be kept in perfection ten or twenty years. In the great stores at Rheims the breakage amounts, on an average, to ten per cent. The Italian wines often have only olive-oil poured into the neck, being otherwise, without using a cork.

When ready for the consumer wine presents a combination of qualities which has always recommended it as one of the most agreeable beverages known. Yet wines differ much, not only in those nicer points which allure the research of the connoisseur, but also in those matters which are within his reach, and the quantitative analysis of which he can easily furnish. To give a full differential account of even the more common wines is impossible: a general view is all that can be attempted. Most wines contain the following substances, in greater or less proportion; the chief differences being the circumstance of the wine being a white or red one.


Wines are classified according to the predominance of certain of these ingredients. When much alcohol is present, they are termed strong or generous; when otherwise, light or weak; when much sugar undecomposed, sweet or luscious (vins de liqueur); when little, dry; if a free acid in considerable proportion be present, they are called acid or astringent; when much carbonic acid is present, then sparkling or effervescing (mousseux of the French, Schaumwein, German). Wine is more abundant in the wines made in wet seasons, and in the wine from new vineyards or young vines. These are also most prone to become sour. With the currents it was a great object to get rid of the watery portion, and for this purpose they employed various expedients, and often rendered the wine thick.

The plan now adopted by the French is best, to add starch-sugar to the must. The cheapness of this is not only recommendation, as it really is of the same nature a gravy.

**Alcohol.**—The amount of this principle present in wine has engaged the attention of chemists, who are now generally agreed that it exists from an early stage of the fermentation, and is not a product of distillation, as Baudez and Fabbri have supposed. It is also found that in naturally present, much brandy is too often introduced into wines intended for the English market. The table by Mr. Brande, of the quantity in different wines, is generally quoted; but recent analyses show that the amounts are much too high, probably from his having opened wines largely adulterated. The following table of Julia-Fontenelle and Professor Christison are more to be relied on, and agree better with that of Dr. Henderson.

**M. Julia-Fontenelle's Table.**

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<thead>
<tr>
<th>Wine</th>
<th>Abv (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banyuls</td>
<td>15.0</td>
</tr>
<tr>
<td>Rivesaltes</td>
<td>16.2</td>
</tr>
<tr>
<td>Collioure</td>
<td>16.4</td>
</tr>
<tr>
<td>Lapalme</td>
<td>16.5</td>
</tr>
<tr>
<td>Mirepeissel</td>
<td>16.5</td>
</tr>
<tr>
<td>Salces</td>
<td>16.6</td>
</tr>
<tr>
<td>Narbonne</td>
<td>16.7</td>
</tr>
<tr>
<td>Lirigan</td>
<td>16.7</td>
</tr>
<tr>
<td>Leucate de Fiton</td>
<td>16.7</td>
</tr>
<tr>
<td>Montagnac</td>
<td>16.8</td>
</tr>
</tbody>
</table>

**Dr. Christison's Table, from Experiments in 1838.**

<table>
<thead>
<tr>
<th>Wine</th>
<th>Abv (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port, weakest</td>
<td>14.1</td>
</tr>
<tr>
<td>mean of 7 wines</td>
<td>15.2</td>
</tr>
<tr>
<td>White Port</td>
<td>14.6</td>
</tr>
<tr>
<td>Sherry, weakest</td>
<td>13.9</td>
</tr>
<tr>
<td>mean of 13 wines not long in cask</td>
<td>14.5</td>
</tr>
<tr>
<td>stronger</td>
<td>15.3</td>
</tr>
<tr>
<td>mean of 9 long in cask in East Indies</td>
<td>14.5</td>
</tr>
<tr>
<td>Madeira, long in cask in East Indies</td>
<td>14.0</td>
</tr>
<tr>
<td>strongest</td>
<td>14.8</td>
</tr>
<tr>
<td>Sercial, long in cask in Calicita</td>
<td>15.6</td>
</tr>
<tr>
<td>Dry Lisbon</td>
<td>15.8</td>
</tr>
<tr>
<td>Shiraz</td>
<td>15.9</td>
</tr>
<tr>
<td>Amentilado</td>
<td>14.2</td>
</tr>
<tr>
<td>Clarét, first growth, 1811</td>
<td>7.7</td>
</tr>
<tr>
<td>Château-Latour, first growth, 1825</td>
<td>7.7</td>
</tr>
<tr>
<td>Rosan, second growth, 1825</td>
<td>7.6</td>
</tr>
<tr>
<td>Vin Ordinaire, Bordeaux</td>
<td>7.2</td>
</tr>
<tr>
<td>Riversales</td>
<td>12.0</td>
</tr>
<tr>
<td>Malvasie</td>
<td>12.5</td>
</tr>
<tr>
<td>Rudesheimer, first quality</td>
<td>8.4</td>
</tr>
<tr>
<td>inferior ditto</td>
<td>6.0</td>
</tr>
<tr>
<td>Edinburgh Ale, unbottled</td>
<td>6.0</td>
</tr>
<tr>
<td>London Porter, two years bottled</td>
<td>6.0</td>
</tr>
</tbody>
</table>

The condition in which alcohol exists as the natural product of the primary and secondary fermentation of the grape is very different from that in which it is found when obtained by distillation, even of wine, as in the case of the finest French brandy. The addition of any distilled spirit to wine is always to be represented as improving the qualities of the wine, making it flat and mawkish. The much alcohol is not necessary to the keeping of wine is clear, since the Rhine wines keep for a century, yet in
these the quantity of alcohol is seldom more than eight or nine per cent. Dr. McColloch has forcibly pointed out the evils of adding brandy to wine in his ' Remarks,' p. 140: 'This practice, universal in the wines of Spain and Sicily which are intended for the English market, has also been introduced into our domestic wines, under the mistaken notion of preventing them turning sour, and with the idea that it enabled them to keep a longer time.' For the price of a brandy, it is procuring, if not adding. However slow the effects of this decomposition may appear, they are not the less certain. The first and most conspicuous effect is the loss of that undefinable lively or brisk flavour which all those who possess accuracy of taste can immediately perceive in wines or brandy, which is evident and a fairness, which must be sensible, by the principle of contrast, to the dullest palate which shall compare the taste of Claret with that of Port, or that of Hock or Grave with Lisbon or Bucellas. It tends equally, although in a greater length of time, to destroy the union of the colouring principle, which is well known to be deposited in Port wines, and apparently in a great measure from the action of this foreign substance. This fact explains why dishonest wine- makers are in the interest of the use of pure wine, much more particular in calling to this subject the attention of those who may engage in the manufacture of domestic wines, because a notion is prevalent that these wines are above all others deficient in durability, and cannot exist in a state of perfection that can be termed good wine, is to destroy the briskness of these wines, often the only meritorious quality they possess, while it increases their expense and diminishes their salability' (p. 158).

The method has been tried by the organs of the body in the same way as alcohol only diluted with an equivalent quantity of water. This is manifest even in the difference of the moral effects of unadulterated wine, in which the spirit is an integral element, and those of the colorless spirituous liquor. On many hands, a large portion of alcohol. The pure light wines of France and Germany produce an agreeable exhilaration of mind, very unlike the mere physical excitement, almost amounting to frenzy, which results from the largely branded wines, often to the amount of a fourth or even a third, it is most important that the facts above stated should be known to the consumers of wines, more particularly to females, who frequently imagine that they are taking something less objectionable in preferring these to the wines used by men. The light wines of France, of the Rhùne, the Moselle, or other itimitli and Marsanna of Spain, to which brandy is not added, are much to be commended, as more wholesome and not very much more expensive: at all events the health would gain where the purse suffers.

Sugar is the subject of a great importance, as it is to be feared that habits, at once discerrible and difficult to be relinquished, are contracted by women by the use of these highly stimulating mixtures:

1. If cointed these cordial silps to try;
   All feel the effect they send.

   For white omit of them they've all the force.
   And when denied, then drinks are the resource.—Crabb.

Sugar is the characteristic of the street wines. It diminishes with age, so that old wines of this sort are less pungent than the new. Some, such as those of Bergerac, lose their sweetness in six months, and become dry. They are mostly taken in small quantity as liqueurs; but still even in small quantity they are hurtful to persons disposed to the oxalic acid calculi, or to diabetes, and must be avoided. Bilious persons should abstain from them as from saccharine fluids.

They are more easily imitated than the dry and light wines; and at Cette in Languedoc there exists an establishment for it manufacture of an old known wine de liqueur. The Riverielles, Lemel, and Pronfian of France, the Puxarete, Tent, and Malaga of Spain, the original Malmeys of the Grecian Archipelago, that of Madeira, the Constantias, the Tokay, and Lachryma Christi, the Liss of Sicily, and many similar wines. Bitters, such as wormwood, are often used in them, which renders them less cloying and diminishes their tendency to derange the stomach.

Acids. It has been shown above that a free acid is necessary for the development of fungi (Saccharomyces) in which the progress of fermentation seems closely connected, for the evolution of the bouquet, for the agreeableness of the wine, and probably for its wholesomeness. It is therefore a popular error to deny them this effect, and to add it or destroy it. I think that this is however a very important point. Tartaric acid is the best. Whether malic acid be ever present in good pure wine is doubtful. It is said to prevail in wines made in wet seasons. Citric acid is found in this from unripe grapes. It is not certain that oxalic acid is ever found in wine. It may be formed in some rare instances. It is very likely however to exist in considerable quantity in the spurious wine now largely made from the garden rhubarb, and it must be hurtful. Acetic acid, or vinegary, is that however which mostly abounds in low poor wines, especially of northern countries, and in good wines which have been mismanaged and allowed to spoilt. The flav taste of the fluid and a smell among medical men. Dr. Prout (On Stones and Renal Diseases, 4th edit., p. 8) affirms that strong Sherry contains less acid and sugar than any other wine. But several very

P. C., No. 1728.
careful experiments on different wines by no means confirm this statement. If applied to Manzanilla, which is the favourite wine of the Spaniards, it is true; but that wine is scarcely known in this country, however well it deserves to be so, as its freedom from adventitious brandy and its comparative constancy of quality from year to year, a quality always to be prized in wines, strongly recommend it as a summer wine. It will be found that Port wine, both red and white, has less free acid than even some of the finest Sherries. Madeira, has long laboured under a just opprobrium in this respect. Bad Madeira, and the wine which, though produced elsewhere, was sold for it, contain much acid, and readily disagree with the stomach, may be perfectly true; but genuine first-rate Madeira has certainly very little, especially after a voyage to the East Indies. The Madeira wines had fallen off in quality from over-shipment, and thereby gave further effect to this taste for Sherry. In this a useful lesson was given to all wine-growing countries, as Madeira, although now as good, or rather, we should say better than ever, has not yet regained its former favour in this country. The observations of Dr. Paris are too just to be omitted:— 'What, for instance, is the acid contained in Madeira, and against which so many mighty objections have been urged? It is not consumed merely of Acetic Acid. And yet the person who fancies that his digestion can be deranged by its action, will swallow twenty times the quantity of the same ingredient in some other shape, with perfect indifference and impunity.' Before we quit, says the author, the subject of vinous acidity, I beg to say a few words upon its supposed influence in exciting paroxysms of gout. Such attacks have followed particular potations, I do not mean to deny; but a slight excess of any kind, whether in diet or exercise, will excite those paroxysms. In those cases supposed to be derived from the train is laid, an additional glass of Clarét may have acted as the match; but in all such cases the explosion would have equally taken place had, instead of Clarét, some other wine, which contained the same ingredient, been employed. Leibig unhesitatingly affirms that, while to the pre-eminent bouquet of the Rhine wines is owing, to the tartar present in them some of their most salutary properties belong. To this he attributes the immunity enjoyed by those on the Rhine and Moselle, in those lands where the esthetic principle, from the uric acid diathesis. This statement of the utility of these wines might be suspected to originate in national partiality; but it is abundantly confirmed by Dr. Prout and many others who have attended to the subject. But, it may, perhaps, be objected, that this occasional use of them is objectionable, but the habitual use is most salutary. (See Prout, 4th edit., p. 210.) Being light, they can be drunk without dilution, which is preferable to reducing a strong wine by adding water, or mixing it with a much more powerful poison, the diathesis, the stomach. In this respect the Rhine and Moselle wines are excellent in ten years, the Moselle is in six, and some of the clarets in four. Of sheries, Manzanilla is the fit for use in four years, so that the interest of capital thirty or forty years does not tend to increase its price. A wholesome beverage is not the only product of the grape. Brandy may be extracted from all kinds of wine, but more is drawn from some species than others. The strongest wines are not those which give the most spirit. It is more advantageous to distil wines which begin to decline, or become flat, from those which are perfect in flavour, because they are cheaper, and because the spirit in a more decomposed state is more susceptible of it. The wines which are made of coarse and rough produce brandy with difficulty. The sweet wines, if distilled, give little brandy. The more the wine is boiled in the heart of beygon, the better, being much used in commerce: the tartar is used in medicine and bleaching; and the dregs are dried, and serve the drier in the dyeing and the manufacture of hats.' (Pouget.) Vinegar is also prepared in large quantity from wine or its contents, even at Bordeaux. Wine is sometimes used as a substitute of medicinal substances; but as these are apt to spoil, pure spice or vinegar is preferred in many cases. (Henderson, History of Antient and Modern Wines.: Macloch, On Wine.; Pouget, Wines of Bordeaux.; Busby, Visit to the Vineyards of Spain and France.)
W I N

Sutton, On the Culture of the Grape and Orange in Aus-
tralia; Julienne, Topographie de tous les Vignobles de la 
Bretagne, Weinbau in Süd-Deutschland, and also Weinbau 
in Frankreich; Schama, Ungarns Weinbau; Graff, Der 
Mostwein als Getränk und Heilmittel; Bronner, Die 
Deutschen Schauskeine; and Communications from the 
Wine-Societies.

WINE AND SPIRIT TRADE.

The consumption of wine and spirits in the United Kingdom amounts in round numbers to about 28 million gallons, the duty on which, about £9,000,000, is equal to above one-sixth of the whole value of all goods imported into the United Kingdom. The average consumption of wine and spirits has been about 6 million gallons, though during the last three or four years, in consequence of the depressed state of the country, it has fallen very much below this quantity, and in 1841 the duty on less than 2 million gallons. Of foreign and colonial spirits the annual consumption is about 3½ million gallons; and of British spirits about 20 million gallons, though in 1842 it fell below this quantity from various causes. The stock of wine in bond is usually equal to two years' consumption. In January, 1843, the quantity under bond in the port of London was 7,074,547 gallons, and there were 4,450,246 gallons at the outports. At the same date there were 3,681,206 gallons of foreign and colonial spirits in bond, and 2,199,552 gallons of foreign and colonial wines. The duty on wines and spirits has had great influence on the public taste. In 1700 the average consumption of wine in England was nearly one gallon per head, whereas the rate of duty by the Methuen Treaty the wines consumed in this country were most entirely the produce of France, but although the duty on French wines was equalised in 1831, the annual consumption only amounts to one gallon amongst sixty people. In France the consumption of wine is 19 gallons per head and in Holland, with moderate duties, the consumption of foreign wine is one gallon per head. Mr. Porter states in 'Progress of the Nation, that there are wines produced in the United Kingdom that are superior in quality to the best French wines usually drunk here, and that they could be exported at sixpence a bottle without duty. If, as he remarks, wines of fair quality and flavour could be sold by nail at one shilling the bottle, the consumption would no doubt be very large, but the duty alone is at present not less than a shilling a bottle, and the consequence is that the consumption of French wines is chiefly confined to the more rich classes. As another illustration of the effect of high duties in checking consumption, it may be stated that the present duty of 20d. in the gallon on foreign spirits is twice as reductive than the duty of 1½d. in 1801; though if the use of consumption had followed the increase of population, the duty would have been 2,465,767d. more than it is amount actually received. The present rates of duty on foreign spirits have been fixed at 3d. from 2½ to 1825, according to the quantity; on rum from 200 to 400 per cent.; British spirits from 600 to 800 per cent.; Irish and Scotch malt spirits (whisky) 300 per cent. and upwards.

For many years the number of distillers in England has been reduced to twelve. In 1834 six distillers in London and the vicinity paid 1,030,292d. duty on 1,423,525 gallons, the tax being 7s. 6d. per gallon. The number of distillers in Scotland in the above year was 260, and there were 87 in Ireland; but the number of rectifiers in England, Scotland, and Ireland is a proof of the different state of the people in each country. In England, in 1838, there were 726 distillers and 11, and in Ireland only 50. It is very little brandy or rum is consumed either in Scotland or Ireland, the pure home spirit without any artificial flavouring being preferred. Nearly the whole of the spirit distilled in England passes through the hands of the rectifiers, and various ingredients are added to the spirit to give it the flavour resembling Geneva [GIN]; and above 500,000 gallons of English spirit are flavoured in imitation of French brandy. The simple spirit drunk in England under the name of whisky is imported from Scotland and Ireland. The number of gallons imported into England from Scotland in 1842 was 1,652,979, and 34,615 from Ireland. Malt and unaltered grain together are used in the English distilleries; six-sevenths of the Scotch spirits are made from malt, and the remainder from malt and unmalted grain; in Ireland about a tenth is from malt, and, with the exception of a hundred gallons in 1841, the remainder is from malt and unmalted grain. The number of gallons of spirits distilled in England, in 1842, was 6,098,456, in Scotland 7,058,859 gallons, in Ireland 5,315,090 gallons. In that year the duty was 7s. 6d. per gallon in England, 3s. 6d. in Scotland, and after March 11th, 1842, the duty in Ireland was increased from 2s. 6d. to 3s. 6d. The number of persons engaged in the various trades of distilling, complicating, and retailing, in 1840, was as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Distillers and rectifiers</th>
<th>Dealers not retailers</th>
<th>Retailers — premises rated</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>106</td>
<td>2,682</td>
<td>372</td>
</tr>
<tr>
<td>Scotland</td>
<td>2,199</td>
<td>2,492</td>
<td>372</td>
</tr>
<tr>
<td>Ireland</td>
<td>45</td>
<td>326</td>
<td>372</td>
</tr>
</tbody>
</table>

The following table, showing the consumption of British spirits in different years during the present century, is abridged from vol. iii. of Porter's 'Progress of the Nation:

<table>
<thead>
<tr>
<th>Year</th>
<th>England</th>
<th>Scotland</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>3,464,380</td>
<td>1,158,558</td>
<td>4,715,096</td>
</tr>
<tr>
<td>1812</td>
<td>3,622,970</td>
<td>581,254</td>
<td>6,009,301</td>
</tr>
<tr>
<td>1821</td>
<td>4,125,616</td>
<td>2,358,455</td>
<td>6,311,402</td>
</tr>
<tr>
<td>1831</td>
<td>7,443,047</td>
<td>5,703,869</td>
<td>6,710,767</td>
</tr>
<tr>
<td>1838</td>
<td>7,638,490</td>
<td>6,259,711</td>
<td>12,286,342</td>
</tr>
<tr>
<td>1841</td>
<td>8,166,985</td>
<td>5,989,905</td>
<td>6,485,443</td>
</tr>
</tbody>
</table>

In 1841 the consumption of British spirits was at the rate of 0.51 gallons per head in England, 2.28 gallons in Scotland, and 0.80 gallons in Ireland. Before the commencement of the temperance movement in Ireland, the quantity of consumption in that country was 1.75 gallons per head. The quantity of spirits charged with duty in Ireland fell from 12,206,432 gallons, in 1838, to 6,485,443, in 1841, the only change of duty being an addition of 5 per cent. The further diminished consumption in 1843-4 was attributed to the duty of 3s. 6d. a gallon led to illicit distillation. By this addition of a shilling a gallon duty, the minister anticipated an increased revenue of 250,000.; instead of which, in the year ending 5th April, 1843, there was a positive decrease of 7261.; the quantity of spirits brought to charge having fallen to 4,813,045 gallons, or 1,715,901 gallons less than in the previous year. On the 5th of April, 1841, the number of persons in gaol for illicit distillation was 48; on the same day in 1843 the number was 368. The financial mistake was so obvious that, in the session of 1843, an act was passed (6 & 7 Vict. c. 49) for returning to the old scale of duty.

The consumption of rum has been declining for many years in England, and is quite insignificant in Scotland and Ireland. [Not. With the same duty in each country the contribution per head to the revenue, in 1841, was 1s. 3d. in England, 2d. in Scotland, and 2d. in Ireland. In 1831, with nearly the same duty as 1841 (2s. instead of 3d.), it was 2s. 0d. in Scotland and 2s. 4d. in England and Ireland. The same rate of duty on foreign spirits, in 1841, yielded 1s. 7d. per head in England, 5d. in Scotland, and 6d. in Ireland. The quantity of all descriptions of wine consumed in the United Kingdom was about the same as 1841. In 1842, out of 100 gallons, there were consumed — of Portugal wines, 25-7 gallons; Spanish, 46-9; Madeira, 1-3; Teneriffe, 0-4; Sicilian, 8-1; Cape, 7-7; French, 7-4; Russian, 1-1. The consumption of the wines of Portugal was 25 per cent. of the total quantity half a century ago. [Post.]
WING, [Briz.]

WING, VINCENT, an English astronomer of the seven
teenth century, possessed some reputation during his life;
and his writings, at the time they were published, pos-
essed a certain value. Neither the year of his birth nor
of his death is known.

He is principally distinguished by his work (in Latin)
entitled 'Logica Astronomica,' which was published
in London in 1669. This is divided into five parts, of
which the first is designated 'Logica Astronomica;' the
second, 'Trigonometria;' the third, 'Doctrina Sphericas;' the
fourth, 'Theonis Planetarum;' and the fifth, 'Tabulae
Astronomicae.' All of these are added to a collection of
mathematical observations. His theory of the planets is founded
on the systems of Copernicus and Kepler, for he supposes
the orbits of the planets to be ellipses, and the sun to be
placed in a common focus; but, like Buitlalissus and Dr.
Sedley Ward, he considers the other focus of each orbit to
be the centre of the planet's mean or uniform motion.

The transit of Venus, which had been observed by Hor-
rox and Crabtree in 1639, indicated that the sun's parallax did
not exist, a few centuries before the evidence which was
afforded by some astronomers, at that time con-
sidered conclusive; and Wing, who supposed that the
parallax was equal to one minute (more than seven times
as great as it is in reality,) endeavoured to account, from
the then prevalent notion of uniformity of the earth's
motion, from an observation alluded to. The.

The astronomical observations in the work consist of several
luminaries of the sun at the times of the equinox, transits of
Mercury over the sun, and eclipses of the sun and moon, and
a conclusion: among these was the observation mentioned
in the previous paragraph; and it is stated
that at the time when the eclipse should have been total,
the moon was surrounded by a luminous crown
within which it appeared to turn on its centre like a mili-

The 'Logica Astronomica' contains a table of logistic
logarithms, with precepts for their use; and in the 'Trigo-

Wing published (in English) a work entitled 'Harmonicon Coeleste, or the Harmony of
the Visible World, containing an absolute and entire piece of
Astronomy.' It is similar in its arrangement to the 'Astro-
nomical Theory' of the preceding, but it contains
subjects which are not in the latter; and among these may
be cited his refutation of the ancient opinion that the
planets are attached to solid and transparent spheres.

He objects to the opinion on the ground that if it were just
the arrangement of the sun through the whole of
part of the solar system to another, and that the spheres
would produce great refractions in the light which is trans-
mitted to the earth from the fixed stars. The work con-
tains a table of the logarithms of the ten thousand first
numbers, and also of the sines and tangents of angles
for every minute of the quadrant.

It appears he has criticised the 'Astronomia Carolina,'
which was published by Stree in 1661, for the latter re-
plied in 1667 to his animadversions in a work containing,
asp printed in a few years, but the evidence which it
afforded was not, by some astronomers, at that time con-
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the then prevalent notion of uniformity of the earth's
motion, from an observation alluded to. The.
series, which in themselves are not simple, but again subdivided into similar and representative groups. The two great series to which they belong are the animal and vegetable *spherae*, as they have been designated: in the former of the forms of beings are mainly determined by the parts in which they are organically adapted; in the latter, by those of respiration and reproduction. If such analogy be true, we should see evidences of its truth on a comparison of the characteristic structures in analogous groups. Such evidence we perceive on comparison of the cells belonging to the animal and vegetable kingdom with those of the members of the vegetative (or articulate) sphere in the animal kingdom, of the leaf with the wing. There is no finer illustration of the relation of analogy in natural history, than that between the leaf of a plant and the wing of an insect. In both we have a double sheet of cells held together and strengthened by a framework of vessels, the structures of the respiratory system and the processes of the dermato-skeleton supplying the materials in each. Hence Oken has well applied to the wings of insects the name of *serial gills*.

Their anatomical structure has been well explained by Mr. Newport:—They are expanded portions of the common tegument of the sides of the meso- and meta-thorax, scutellum, and the supra-anal tinea, and of the parapleura, and the accompanying passages for the circulatory fluids, and their motions are intimately connected with the function of respiration. These tracheae ramify throughout the insect, and the gas cells of the tracheae are evolved by the assumption by the insect of the imago state, become solidified, like the rest of the skeleton. They are hollow, for the reception of air, like the proper respiratory organs within the body. They afford strength and lightness to the wings, with which they are united. Each segment of the flowers, the wings of birds, although the organs themselves in these classes are not analogous.  

They are distinctly seen," says the last-mentioned admirable observer," on the second or third day after the insect has assumed its last larva covering, before changing to the pupa state. They are then scarcely so large as the head of a moderate-sized pin, and appear like newly-formed folded portions of delicate tegument, extensively supplied with ramifications of minute air-vessels derived directly from the principal tracheae. They are at that time situated immediately beneath the cuticle, and situated between the parts of the sides of the meso- and meta-thoracic segments, and continue to increase in size during the growth of the larva. When the insect has discontinued to feed, about a day or two before changing into the pupa state, the future pupa is nearly completed beneath that of the larva, those rudiments of wings have become so much enlarged that their existence is distinctly indicated by the swollen appearance of the segments. It is at this period of the larva state that they were formerly discovered by Swammerdam. At the moment of fissuring the skin of the larva, they are suddenly somewhat enlarged; and when the skin has been cast off, and the delicate parts of the newly exposed naked pupa are beginning to be agglutinated together, they become solidified,

This drumming, or solidifying of the pupa case, they again acquire a considerable increase of size, owing to the extension and enlargement of the tracheal vessels within them, together with a corresponding increase in the quantity of the air with which they are expanded and invested. The wings are then expanded so as to cover the whole under-surface of the thorax and limbs; and when the insect subsequently bursts from the pupa case and is assuming the perfect state, they are again leaved out, netted, and expanded through the recurrence of similar phenomena."

The normal number of wings in insects is four, their position on the second and third segments of the thorax, and united to it by means of jointed and triangulating processes. The butterfly insects in the Dytiscid, certain *Hymenoptera* and Diptera, we find places of a third pair of wings. In others the number is apparently reduced to a single pair, but this is rather from a change in the form and character of the posterior wings than from their abrogation. As the habits of insects vary, equal powers of flight are essential in all the species, and as many are frequenters of situations in which the delicate textures of their wings are liable to injury, we find various modifications of their forms and structure, all to increase the circumstances under which the species is destined to pass its life. In a great number, such as the beetle tribes (Coleoptera), which live mostly on the ground and burrow in the earth or in wood, the anterior pair are hardened by the solidification of their membrane, and are as a result lost. In others the wings are reduced in size and shape, forming bodies called *halteres*, or poisers, shaped like a club, or presenting the appearance of a round ball on the extremity of a footstalk. Burmeister has been successful in making these muscles necessary to the insect during flight; for when he cut them out, the mutilated insects could fly but short distances. Burmeister has verified Schelver's experiments. Every fly which he deprived of its poisers lost the faculty of flight; it flew a short distance of two to three feet, but then rolled over and fell to the ground. If then it was urged, it made a fresh endeavour to fly, but failed in the same way.

The distribution and arrangement of the air-tubes, or air-nerves, in the wings is very various in the several families of insects, but so constant in each, that naturalists have found important characters upon them. There are two principal varieties of respiration in wings, reticulate and simple. An example of the first we see in the wing of the dragon-fly, where the principal nervures are situated together by others which are transverse, and often proceed at right angles from the larger ones, thus producing a beautiful netted aspect. Of the second kind the wing of the bee is an instance, where the nervures are simply anastomosing without being transverse. In the dragon-flies the arrangement of the nervures has been made use of by Jurine, St. Fargeau, and Shuckard as a valuable aid in classification. The last-named entomologist has given the names *angulata*, *fasciata*, and *punctulata*, so that the description of a wing is invested with a rigorous precision, of great consequence in the correct determination of species. Bowerbank has observed and described the circulation of the blood within the nervures. In the Orthoptera the production of sounds by certain of the species depends on the distribution of the nervures. At the inner angle of the base of each superior wing in the male *Acrida* there is a round, transparent, flat, nerveless space formed of tense membranes framed by strong nervures, which has been shown to be instrumental in producing the sounds for which that insect is remarkable. Burmeister explains its operation by means of the violent volatil motions which agitate the whole body, but during which the wings are expanded, the air is vibrated in the spicules, and especially out of the central ones of the thorax, and hence sounds against the infected external margin of the superior wing, which is pressed closely to the thorax. It is then necessary for the hind wings to fold the wing in order to escape from it beneath the posterior margin. Pursuing this path, it precisely strikes upon the just-described elastic field of the superior wing, which vibrates through the nature of the air, and hence emits the sound. This explanation does not seem sufficient; and in fact an important part of the structure is overlooked. M. Gourreau has shown that, besides the drum on the right elytron, there is a file or bow on the left. On the top of the left elytron, viewed from below, a
dilatation is seen, analogous to that of the right, but not so transparent. Its consistence appears to resemble that of the other portion of the elytron. What is most remarkable about it is a thick nervure striated like a file, which crosses it in a nearly parallel direction to its upper border, which I have named the bow.* (Essay on the Stridulations of Insects, translated in 'Entomological Magazine,' vol. v.) It is the action of this bow on the nervures and the tense drum which causes the sound. 'The males,' says Mr. Gourou, 'sing to call the females, and to please them. Three or four are sometimes collected together on the branches of some shrub, where they perform concerts in company, which, although they may not seem very harmonious to us, doubtless do so to the grasshoppers themselves. They appear to take great delight in this music and to emulate each other in singing. In these concerts it has been observed that the musical instruments are not all equally perfect; some give out acute and clear sounds, whilst others produce dull and harsh ones; this may be caused by some injury which the membrane of the drum has received; or from some defect in the bow, the teeth of which would be worn by long and frequent use.'

The chirping of the cricket is produced by a similar apparatus to that just described, one of the elytra being furnished with a bow and the other with a treble string; so that when they are crossed and rubbed against each other vibrations are excited and sounds are produced. The nervures which cross the elytra divide their surfaces into a great number of variously formed compartments, which have an audible vibration and a separate sound; the combination of all these little sounds produces the general sound or stridulation. When the insect crosses its wings rapidly, and passes the whole length of the bow over the treble string, it makes that loud and lively stridulation which we hear so frequently; and this is the very song with which he calls the female: but when he rubs the brush against the internal border of the elytron by a slight vibratory movement, he produces that sweet and soft sound by which he excites his sated mate. The sound must be artificially produced by rubbing the elytra together in a dead insect. A good account, with excellent figures of the sound-producing structures in Acrida and Acheta, may be found in Mr. Newport's excellent articles on the anatomy of insects, in the *Cyclopedia of Anatomy and Physiology.*

Whilst many species of insects have their wings smooth and naked, others have the surface more or less covered with hairs, spines, or scales, which in all cases are either projecting cells or layers of minute epidermal cells imbricated on each other. In certain species the hairs are converted into strong hooks or curved bristles, which lock the wings together, and thus aid the insect's powers of flight. The fine points of the wings of butterflies consist of scales of very beautiful forms and structure. The minuteness of these bodies may be conceived from the curious observations of Mr. Bowerbank, who, upon carefully measuring one of the dark-brown scales from the wing of *Papilio ursus*, that its greatest breadth was but \( \frac{1}{180} \) of an inch. The quill by which it had been attached to the wing was \( \frac{1}{480} \) of an inch in diameter; the distance of the strig upon its surface from each other \( \frac{1}{720} \) of an inch; and the diameter of the longitudinal strig themselves \( \frac{1}{840} \) of an inch. He found the scale of *Mivha* Méndelus to consist of at least two distinct layers; the uppermost formed of numerous longitudinal and cross striae, covered or connected by a thin membrane more or less coloured, and the under one composed of a somewhat thicker and stronger membrane, of uniform texture and without striæ.

The following table exhibits the relation of the forms and modifications of the wings of insects to the various orders into which they are grouped:

<table>
<thead>
<tr>
<th>Wings similar</th>
<th>Nervures reticulate</th>
<th>Neuroptera</th>
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<tbody>
<tr>
<td>Nervures simple</td>
<td>Dictyoptera</td>
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<td>Homoptera</td>
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<td>Hymenoptera</td>
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<td>Lepidoptera</td>
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<td>Coleoptera</td>
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<td>Orthoptera</td>
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<tr>
<td>Homoptera, pap.</td>
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<tr>
<td>Diptera</td>
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<table>
<thead>
<tr>
<th>Wings dissimilar</th>
<th>Anterior wings corneous</th>
<th>Neuroptera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semicorneous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pergamentous</td>
<td></td>
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<tr>
<td>Posterior wings transformed</td>
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WINNIEP, LITTLE LAKE. [MISSISSIPPI RIVER]

"WININAM, JOHN, an ecclesiastical, whose name occurs very frequently in connection with the history of the Reformation in Scotland, but whose real influence in that struggle was not so great as to enable him to make a brief notice. He took the degree of B.A. at St. Andrew in 1515. In 1536 he was subprior of the monastery of St. Andrews. His first public appearance was at the trial of George Wishart [Wishart], where he pronounced the sentence. A singular duty for one who is said to have embraced the doctrines of the Reformation, and as singularly performed by his preaching, as appropriate to a trial of heresy, from the parable of the wheat and the tares. He both gained for himself and his church. He continued to hold office in the Roman Catholic church till the parliament of 1560, where, though sitting as prior of Portnoak, he appears to have voted for the 'Confession of Faith' which was then passed. On the establishment of the new polity in 1560, he appealed to the papal court, which had the sanction of the eastern districts. His influence in the new church was very considerable, but it appears to have been merely that of a dexterous intriguer, who knew when and how to gain the best effect to remove his support from a party he could not sufficiently reward his services. Knox, while accepting his aid, seemed always to have distrusted him. He died on 28th September, 1582."

(Wodrow, *Biographical Collections printed for the Man- land Club,* pp. 69-70, 711.)

WINCSLOW, JACQUES-BEIGNÉ, was born at Odes- see, a town in Denmark, in the island of Fünen, on the 9th of April, 1669. He was the nephew of the celebrated Stenon, and his father was a Lutheran minister in the parish of Odensee. Winsew was destined for the church, and early commenced his studies in Lutheranism. He however changed his mind and took to the study of medicine, and obtained a pension from the king of Den- mark for the purpose of enabling him to study medicine in the universities of Europe. He first went to Hol- land, where he studied for some time, and in 1668 he ar- rived in Paris. Here he became a pupil of the celebrated Duverney, who encouraged his taste for the study of anatomy. He pursued his medical studies without other interruption than an occasional dissertation on the subject of religion with a young Dane. Winslow for the sake of argument assumed the principles of Romanist,
and, to render himself more skilled, purchased Bossuet's
• Exposition of the Doctrine of the Church.' This work
led him seriously to question his own principles as a Pro-
testant, and as a consequence he recurred to Bossuet,
who was then widely read throughout, and whose
works, it appears, had been an act of sincere conviction
on the part of Winslow, and that he did not appear to have
my suspicion of the advantages that might be the result.

Whatever he expected in Paris, he forfeited in Den-
mark. He was invited to attend the meetings of the Academy,
and Meaux however became his patron, and he accordingly
proceeded to take his degree from the Faculty of Medicine
in Paris, which he did in 1706, but however until after the
death of his benefactor, who died in 1704. He had by
this time rendered himself favourably known by his ex-

In 1707 he was admitted a student of the Royal
Academy of Sciences of Paris, and afterwards an associate.

About this time he also assisted Duverney in his lectures
on anatomy, and the same time he did not however succeed to this position till after the
death of Fauquart, who was successor to Duverney, and which oc-
curred in 1743. Eleven years previous to this, Winslow
had published his great work on human anatomy, with the
title of, 'Les tentes et principes de l'anatomie humaine', Paris, 1732, 4to. This work obtained for him
at once a great reputation, and placed him among the best
anatomists of his day. This work is not more remarkable
in its elaboration of thelovers of another, and the clear manner
will win for him his readers, two days of astrono-
ungal observation which it contains. In the introductory
hapters to the description of each system of organs, he gives a general view of their functions, and in this de-
artment of science his judicious observations did much credit
to the science, especially in the description of the
functions of the muscular system. The 'Exposition'
has been often republished. It was translated into English,
dublished in London as early as after its publication as
1704, and also into Latin; and is the model on which most of our text-books
human anatomy have since been constructed.

Some of Winslow's biographers state that he was twice
early buried alive, by falling into a state of only apparent
decay, and buried in the earth of that time, of a cause of certain and uncertain death, and the result of his
searches he published in 1740, in an answer to the
section, 'An mortis incerta signa minus incerta à chirur-
diae quam ab albis experimentis? This treatise was tran-
slated into English, 1742, and published in London as early as after its publication as
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In addition to his other appointments Winslow was made
appointed of the Teutonic languages at the Royal Library
of Paris. He was an active member of the Royal
academy, and published and papers on various sub-
cpts in their Memoirs. He practised medicine in Paris,
was remarkable for the timidity with which he pre-
mixed, and is said never to have ordered a powerful dose
of medicine. It is said that he was the first of the school of medicine that those who have studied the
human frame in detail have been afraid to treat it as
whole, and some of the best anatomists have been the best
practitioners. Winslow lived to the age of ninety-
ne, and held left behind him a son and a daughter.

Biog. Med.; Ely, Dict. Histo de la Médecine; Biog. Univ.)

WINSLOW. [Buckinghamshire.] WINSLOW, THOMAS, was born in 1755. He received his
education at Clare Hall, Cambridge, of which he became
a Fellow. He took his degree of Master of Arts in 1692. Having determined on studying medicine, he
visited the Continent, and attended the lectures of the most celebrated men of the day. He became a pupil of
Fabricius, of Aquapendente, also of Caspar Buhin of
Haute, and of Prosper Alpinus at Padua. He took his
degree of Doctor of Medicine at Padua, and returned to
London to practise his profession in 1697. He was then
admitted a Licentiate of the College of Physicians, and
became a Fellow in 1711. On the death of Dr. Moussel,
who was also a Fellow, he succeeded to his chair at
the College. It was here he delivered those lectures on
anatomy which after his death were published, and were
for a long time considered the best textbook for students
of anatomy. He obtained permission from the House of Lords
to leave the country during the troubles of 1642 and
returned after an absence of ten years. He died on the
24th of October, 1655. (Ward's Lives of the Gresham
Professors; Chalmers, Biog. Dict.)

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wrote numerous works on Russian history and literature,
in 1752, and, even at the early age he had then attained, displayed himself his sagacity and courage.

Van Winter was still only a lieutenant in 1757, when the Revolution broke out in Holland. He attached himself to the popular party, and the adherents of the Stadthouder having gained the ascendency, he was obliged to fly to France where he joined the French army; served with dis- tinction under Dumourier and Pichegru, in the campaigns of 1792 and 1793; and was promoted to the rank of Ge- neral of Brigade.

Van Winter returned to Holland in 1796, when the repub- licans under Pichegru invaded that country. The States-General invited him to re-enter their navy, and offered him the rank of rear-admiral. Next year he was promoted to be vice-admiral, and placed in command of the Texel fleet.

After being kept in port for a considerable time by a su- perior blockading force, he evaded its vigilance, and put to sea, intending to join the French armament at Brest, on the 7th of October, 1797, at the head of twenty-seven armed vessels, fourteen of which were ships. At nine o'clock on the morning of the 11th, he found himself in the presence of the English fleet under Admiral Duncan, which consisted of sixteen ships of the line and a number of smaller vessels. The action commenced about 10 a.m. and continued till 11 p.m. On the 12th, the Vryheid (74 guns), Van Winter's ship, engaged with three English vessels, and struck to Vice-Admiral Onslow, after losing all its masts and the half of its crew. The Dutch lost in this action nine ships of the line, taken or destroyed, 600 men killed, and about 800 wounded. The loss on the side of the victorious English was scarcely less severe.

Van Winter was received in England with the respect due to a brave man. He was libered by exchange in a few months, and on the 11th October, the committee commissioned to examine into his conduct declared that he had maintained the honour of the flag of the Batavie republic. The despatch in which Admiral Duncan gave an account of the action bears testimony to the obstinate valour of Van Winter. In this action he performed under command (Vice-Admiral Reynettes) their ships—*The carriage on board the two ships which bore the ad- mirals' flags has been beyond all description.*

He was sent in the capacity of minister to the使团 of the French government in 1796, and retained the appointment till 1802, when he was recalled to take the command of the Dutch fleet. The only memorable event that marked his period of command was the termination of the obsequies between Holland and Tripoli by his manage- ment.

Louis Bonaparte, when king of Holland, reposed entire confidence in Van Winter, whom he created count of Hueca, marshal of the kingdom, and commander-in-chief both of the armed forces and land forces. He detached Holland into the empire, treated him with equal favour, made him grand-officer of the Legion of Honour and inspector-general of the shores of the North Sea. In July, 1811, Van Winter was appointed to command the naval force assembled at the Texel. A severe attack of sickness forced him to leave the fleet for Paris, where he died on the 2nd of June, 1812. He was buried in the Pantheon, with all the ceremonies usually observed at the obsequies of the great dignitaries of the empire; M. Marren delivered the funeral oration. (Biographie Universelle; London Gazette Extraordi- nary, 10th October, 1797.)

WINER, PETER VON, chapel-master to the king of Bavaria, knight of the Order of Merit, was born at Mannheim, in the year 1753. His father, a brigadier in the Palatine guards, observing his son's genius for music, placed him with the court musician, Mair, from whom he learned the rudiments of the art. His instrument being the violin, he completed his studies as a violinist, at the chamber of Williamramer (the father of J. B. and F. Kramer), who was first violin at the court of Mannheim from 1750 to 1770. With this excellent master he made such progress, that he became a performer in the editor's orchestra at the court of Mannheim, and speedily distinguished himself on other instruments.

It has been generally supposed, but erroneously it appears (Harmonicon, iv. 176), that Winter studied composition under the Abbé Vogler. He always denied this, and in a manner which indicated a strong dislike of the Abbé. He certainly had an aptitude for secrecy, and a very great respect for the name of Salieri of Vienna; but it is probable that he was more indebted to his own penetrating mind, directed to a careful examination of the scores of the great contemporary masters, to which he devoted much time, for his know- ledge, than to the instruction of any individual teacher.

In 1776, when Lessing carried into effect the establishment of a German opera at Mannheim, Winter was chosen director of the orchestra. He now first attempted com- position, and all his early efforts so decidedly failed, that he wisely communicated them to only a few intimate friends, and destroyed them nearly as soon as they were written, as example of wisdom which might have been most benef- icially followed by nineteen out of twenty of the day's composers, whose ill success may be, in many cases, compared to that of the first attempts which Winter displayed. In 1780 appeared his first complete opera, *Helena und Paris,* and this was followed by *Bellerophon.* He had brought out three ballads to *L'estéme Royale* the celebrated singer Hoffmann. His hint, induced him to listen and study more, and to write less. We therefore do not hear of his having produced anything worthy of notice till the year 1791, when he pro- ceeded to Italy, and at Naples composed *Antigone,* the *Iliadum,* and *Pyrrhus,* for the opposite seasons of the year, and for Venice. From 1794 to 1796 he resided at Vienna, where he produced some of his most effective works, and among these was *Das Unterbrochene Opferfest* (*The Inter- rupted Sacrifice*), the *libretto,* or text, of which was by his brother, and in which he displayed his power to fasten the place of residence, where he brought out *Il trionfo del Bel Sesio,* and *Maometto.* He was then invited to un- dertake the direction of the opera at Munich, for which he wrote his *Maria von Montalban.* Between 1796 and 1803 he produced his three finest works—*Calypso,* *Il Ratto del Prodigtio,* and *Zaira,* the chief characters in which were produced by Mrs. Billington and Madame Grasini. He here also brought forth the music of the grand ballet *la Fille du Pharaon,* and his second performance of mis- sing in the stage, unifying the energy and vivacity of pantomimic music with the char- telled regularity of that of the drams. From London he proceeded to Paris, and gave his *Tamerlano* at the *Théatre des Bouffes du Nord.* He was then persuaded to rest Quinault's *Castor et Pollux,* originally composed by Rameau. Gluck long before had de- clined this dangerous task, and Winter by undertaking it drew down on himself a storm from the admirers of the existing French opera, which induced him to abandon the same work was afterwards performed in London without success.

In 1814, the fiftieth year of Winter's service in the service of the Crown of Bavaria, the king bestowed on him the honour of knight of the order of the Holy Ghost, and a pension of 4000 francs. He continued to write and perform oratorio, and composed a number of songs, sonatas, quartets, and similar works. He died at Munich in 1825.

Winter's music was very prolific. His German biog- pher gives a list of nine masses and other religious and dramatic works; of operas and oratorios, of oratorios, symphonies, and other instrumental pieces, thirteen sets of cantatas, sonatas, together with numerous detached compositions, all of which he produced five years before his death; and to these must be added his instrumental works, subsequently to those composed. His early works did not exhibit much genius; but as he advanced in life his mind became gradually more vigorous, and his length developed a power which entitles him to be ranked very high as a composer for the stage and for the orche-
anthers. This ema—subcordate, has the W style diehotomous; is Harmonicon, the the whilst has they 5-celled, the the the Don's the corolla Opferfest, Zaira, introduced the programms of the Philharmonic and other concerts where good music is properly executed and well understood.


WINTER-ACONITE. [Eranthis.]

WINTER-BERRY, the name of the plants belonging to Prinos, a genus in the natural order Aquifoliaceae. The genus Prinos consists of shrubs with deciduous or permanent leaves, and solitary flowers. The flowers are mostly 2-celled, and often 5-celled, the styles deciduous. The fruit is generally a berry, or rarely a capsular fruit. The species are native to Europe. Among the species are: P. cyphus, P. decidualis, P. leucaphyllum, P. americanus, P. japonicus, P. japonicus americana, P. japonicus multiflorus, P. japonicus chinensis, P. japonicus japonicus, P. japonicus japonicus japonicus, P. japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus japonicus 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Spain, and Italy the berries are eaten by the peasant, and in some parts are made into pies.

P. pubescens, Downy Winter-cherry, is a branched herbaceous plant, clothed withomentum; the leaves are deciduous, acuminate, and sometimes unequal at the base; the corolla spotted; the anther violet coloured; the calyx permanent, ovate, acuminate, angular, and retuse at the base. It is a native of North America, in Virginia, the Carolinas, and Pennsylvania. The berries are yellowish-green colour, when ripe, and are used for making tarts.

P. somnifer a is a shrubby plant with glute entire leaves, which nearly sessile, at the base, or leaf base, inserted flowers the plant is a native of the East Indies, also of the south of Europe, in the Grecian Islands and in Spain. It has a yellowish-green corolla, and a small red berry. It appears to be the Συρίας ήσυχας of Dioscorides. Its name would lead to the supposition, that it possessed active narcotic properties, but of these little appears to be known, although it is not an uncommon plant in some districts of Europe.

P. viscosa, Clamy Winter-cherry, is a herbaceous plant, and scabrous from being covered with short dully three-forked hairs; the leaf is perfoliate, the petiole, the stem is dichotomous; the leaves ovate or subcordate, entire or toothed; the flowers almost spotted; the segments of the calyx unequal, broad, and ovate. This plant is a native of Brazil, and extends from Pennsylvania to the Carolinas in North America. It is so named from its being covered with forked bristles. It has a yellow berry, which is smooth and viscid, and has a pleasant acid taste. In most cases the fruit of Physalis has a bitter taste when ripe, which contains a minute projection. Many other species, as P. Persicaria, bear edible berries, and are reputed to possess medicinal properties, but they do not appear to be of an active kind.

WINTER-GREEN, the common name of the genus Pyrola and its allies, is given from the winter-berry, or the tribe Pyrole, of the order Ericaceae; but Lindley constitutes this tribe a distinct order, with the name Pyrolaceae. It has the following characters:—Calyx 5-leaved, persistent, inferior. Corolla monopetalous hypogynous, regular, deciduous, 4- or 5-celled, with an truncate corolla. Stamens hypogynous, twice as numerous as the divisions of the corolla; anthers two-celled, opening by pores. Ovary superior, 4 or 5-celled, many-seeded, with a hypogynous disk; style 1, deciduate; stigma slightly indented. Fruit capsule, 4- or 5-celled, with a central placenta. Seeds indefinite, minute, winged; embryo minute, at the base of a fleshly albumen. (Lindley, Nat. Syst.) The species are herbaceous plants, rarely shrubs. The majority of them are found in the montane districts of North America, but several of the species are also found in Europe, Asia, and Africa.

P. Alkengi, the Alkengi, or Common Winter-cherry, is a shrub, with the most simple stem ovate-celled acuminate leaves; spotless flowers; an ovate or round yellow calyx. The fruit is a yellowish berry, which has an acidulous flavour. The berries were known to the ancients, and the plant is described by Dioscorides under the name of Συρίας ήσυχας. The juice of the fruit was said to be of great repulse to scabs and administered in dropsy cases, and also in calculus disorders. In Germany, P. C., No. 1739.

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Cladothamnus: calyx 5-parted; 5 petals; 10 stamens, with anthers adnate; stigma 5-lobed; capsule 5 or 6-valved, and 5 or 6-celled; seeds small and adhere.

Galax: calyx 5-parted; 5 petals; stamens united into a ten-toothed tube, the alternate teeth bearing anthers, the anthers l-celled; stigma entire; capsule 3-celled.

The species of these genera are natives of Europe, North America, and the northern parts of Asia. The following species may be taken as examples of the order:

Pyrula rodandofolia, Round-leaved Winter-green, has the stamens curved upwards; the style decline, arcuate at the apex; the petals obovate; the segments of the calyx lanceolate, acute, recurved at the apex, half the length of the corolla, and with equal racemes. This plant is a native of Asia, Europe, and North America. It is found in Great Britain, in the North of England and the Highlands of Scotland, but it is a rare plant. It has milk-white flowers and much leaves, and is the largest plant of the genus.

There are four other species of Pyrola natives of Great Britain; one of these, P. uniflora is only found in Scotland.

Pyrula aphylla, Leafless Winter-green, has no leaves, the scape is angular, and furnished with numerous scales at the base; the racemes are many-flowered; the petals are roundish and the disk of the stigma is elongated. This plant is a native of Nootka Island, on the north-west coast of America, where it was collected by Mr. Menzies. It is remarkable for having the approach of the genus to the characters of Monotropaceae. It has globose, pendulous, milk-white flowers, and the scales upon the scape are of a greenish colour.

The species of Pyrola are pretty plants in gardens, but they are very difficult to cultivate. They grow best in a sandy or gravelly soil, and in a shady situation. They should be surrounded by moss and covered with a hand-glass. They may be propagated by division.

Chimaephora is the Pyrola umbellata of Linnaeus. It is a native of Europe, Asia, and North America. It is a very bitter plant, and on that account has been introduced into medicine. [Chimaephora.] C. mocularata is a North American species, and found in sandy or alpine woods from Canada to the Carolinas, and on the north-west coast. It has lanceolate acute leaves, with white bands on the upper surface along the nerve and veins, placed opposite, or 4 in a whorl. The peduncles are duny and from 2 to 3-flowered. The Indians value this plant highly, and use it medicinally under the name of Spruce. Mr. Pursh recommended a decoction of this plant in cases of hysteria, and also in scrofulous diseases.

Moneres and Cladothamnus have each one species. M. grandifolia is a native of Europe, Asia, and North America. It is grown in alpine woods in the western parts of Europe, and in the island of Sitchn.

Galax is a genus of doubtful position. Lindley places it in Pyrolaceae; but, according to Snuff-gem, it is better to subsume it under Galaxaceae, as it bears the name of a distinct order Galaceae, and combines with it the genus Francoa, and Tetilla genera which constitute Jussieu's order Fraxineae. Galax has but one species, G. aphylla. It is a small herbaceous plant, a native of Virginia. It has naked scapes, which bear a loose spicate raceme of small white flowers at the apex. It is a pretty plant, worthy of cultivation, and may be grown in a pot soil in a moist situation, and increased by dividing the roots.

Galax umbellata is a natural order of plants belonging to the albuminous group of polypetalous Exogens. This order is characterized by possessing hermaphrodite or unisexual flowers; from 2 to 6 sepals, which are sometimes not to be distinguished from the petals; the petals are four in number and when more than five, in several rows; the stamens are hypogynous, short, indefinite, and distinct; the anthers adnate; the ovaries are definite, arranged in a single whorl, 1-celled, with simple sessile stigma; the fruit is either dry or succulent, and consists of a single row of carpels, which are distinct, and dehiscent or indehiscent; the seeds are solitary, or numerous, and either with or without an aril; the embryo is very small and straight, and situated at the base of a fleshy alburnus; the seeds consist of nutlets, or shrivelled; alternate, dotted, concave, persistent leaves; convolute, deciduous stipules; and solitary, sweet-scented, brown or chocolate-coloured flowers.

Illicium Chinarum.

I. cutting with flowers and leaves; 2, flower separated; 3, carpel.

This order has obtained its name, given it by Borrer from Wintera, the old name of the Drimys Wintera. This name was given in honour of William Winter, a captain in the Royal Navy, who sailed round the world with Sir Francis Drake. It contains four genera, which are distinguished:

Illicium. Capsules disposed in a stellate form, opening above, 1-seeded; seeds shining; calyx composed of 4 petal-like sepals.

Temus. Carpels two, baccate; seeds with an aificially single; calyx trifid.

Drimys. Carpels crowded, baccate, many-seeded; calyx united; stamens thickened at the top; calyx entire; three-parted.

Tsarnoma. Carpels solitary, membranous, indehiscent; many-seeded; calyx of three sepals, or three-parted.

These genera constitute the section Illiciaceæ of the order Magnoliaceæ of De Candolle. They differ from Magnolias in their dotted leaves and also in their aromatic qualities. A. de St. Hilaire states that some species of Michelia have dotted leaves, which destroys the distinction between these plants and those belonging to Magnoliaceæ. This order, though small, has an extensive geographical range. There are about ten species, of which two are found in New Holland, two in the hotter parts of America, two in South and two in North America, one in China and Japan, and one in New Zealand.

The following species of the genera are worthy of notice:

Illicium Floridanum, the Florida Anise-seed tree, bears from twenty-seven to thirty dark purple petals, the outer ones oblong and the inner ones lanceolate. It is native of West Florida. The leaves of this plant, when bruised, smell like anise, and the whole plant contains a volatile oil, which may be obtained by distillation. It has a spicy aromatic taste and smell, which in the plant is combined with a bitter principle.

Illicium amicinum, the Chinese Anise-seed tree, has from twenty-seven to thirty yellowish petals; the outer ones oblong, the inner ones linear and shaped. It is a shrub, like the last, reaching about eight feet in height, and is native of China and Japan, where it is frequently cultivated in gardens as an ornament. The fruit of this plant is known by the name of Chinese Anise, and is frequently
used as a condiment to give an agreeable aromatic flavour to certain dishes. It is the material used to flavour the liqueur called *Aristide de Bordeaux*. In China it is chewed after dinner as a stomachic and to soothe the breath. In the East Indies it is sometimes mixed with tea. In Japan the powdered bark is burned as incense in the temples, and garlands of the tree are placed upon the idols, and are also laid upon the tombs of the dead. There is also a popular belief that the fruit of *T. moschata* is a potent aphrodisiac.

*Teucrium moschata* is a shrub found in Chili. It has green shining leaves two inches long, and crowded upon the branches, with musk-scented flesh-coloured flowers having petals two or three inches long. The berries resemble those of the coffee-plant, and are exceedingly bitter to the taste.

**Drimys Winteri**, the true Winter's Bark, has oblong, obtuse leaves, the inner surface glaucous; the peduncles abutted in Laguncular. An Experimental and Enquiry on some properties of the tree, by Captain W. Winter, in the expedition of Sir Francis Drake round the world. He had found it useful against scurvy in his ship's crew, and employed it both as a medicine and a condiment for food. The bark which is met with in English commerce consists of the same materials as the genuine Winter's Bark; but is two inches in diameter. It is pale greyish-red externally, and has an agreeable pungent aromatic taste. It contains an acid resin, an acid volatile oil, and a little tannin. It is an excellent aromatic, but can seldom be met with in English shops. The essential oil of the *Crista alba* is often substituted for it. It is the Wintera aromatica of older botanists.

**Drimys Granatensis**, New Granada Winter-bark, has ovate-oblong or oblong acute leaves, tapering to the base and variegations in the under-surface of the leafy stems, umbellate, and usually aggregate at the tops of the branches. This is a tree about twenty feet high, and grows in the mountains of New Granada and Brazil. In New Granada this tree is called *Ag*; and in the provinces of Quito and Guayquil, *Winter's Bark*. Winter's Bark has been described. The bark of all of them is aromatic and stimulating, and is much used by the natives where they grow, both as a medicine and for seasoning their food.

There are three other species of Drimys possessing the same aromatic properties.

**Teucrium aromatica** is a native of New Holland, especially in Van Diemen's Land. It possesses the same aromatic qualities as the species of the other genera of the family. The only other New Holland species, *T. insipida*, does not exhibit the aromatic qualities the *T. aromatica* which are so striking in the first.

**WINTERHUR.** [ZURICH.]

**WINTERHEIM.** [SCHWAEB.]

**WINCHESTER, CLIFTON.** Father and son. The elder Clifton, Wincham practised as a physician at York, and published several works, which have obtained for him a reputation both as a physician and physiologist. His first work was on gout, and was published at York, with the title *Tractatus de Podagra, quo de ultimis et liquide et sucro nutritio tractatur*, 1714, 8vo. In this work there are evident indications of his belonging to the mechanical school. He attributed gout to several causes, such as the arthritic viscidness of the nervous liquid, the moon's influence, and to his own circumstances. In 1715 he published some observations on the diameter of the vessels near the joints. In 1718 he published *A Treatise on Endemic Diseases*. This work consists of an analysis of the causes producing endemic diseases, and attributes them variously to a change of the atmosphere, a strong wind, or the nature of the soil, to the influence of water and food, and particular climates. In 1729 he published a commentary on the epidemical diseases of York and its neighbourhood, with the title of the book *Commentarium nosophologicum morbos Epidemicos et contagiosos in urbe Eboracensi, locupietiam, vicibus, ad annum 1715 ad annum 1729 innumeris gradationibus complectens*. London, 1729. 8vo. This work is an admirable description of the diseases on which it treats. A second edition was published by the younger Wincham in 1733. In 1747 he published a second edition of his book *Parts of the Animal Structure*, 8vo. These inquiries were principally directed to the vascular system and the functions of the eye. In 1743 he published a second physiological work, entitled *An Enquiry into the Eality of the Vessels of a Human Body*, 8vo. In this work he has attempted to apply mathematical formulæ to the solution of physiological problems. But as the data upon which all the subsequent reasoning was based were mere assumptions, he came to no results of any importance; but these works, although not of much value, contain some valuable observations and valuable results. These works are often erroneously attributed to his son, and this error pervades most of the continental biographies. The elder Wincham was a fellow of the Royal Society, and died at York, on the 12th of May, 1744.

The younger Clifton Wincham was born at York in 1710, and was educated at Trinity College, Cambridge, and took his degree of professor of medicine in that university in 1740. He afterwards became a fellow of the College of Physicians, and settled in London. In the same year he was appointed physician to the Duke of Cumberland, and in 1762 was made physician to George III, by whom he was knighted. In 1759 he was made physician extraordinary, and subsequently was appointed physician general to the army. He was created a baronet in 1734, but the title has now become extinct. He had a large practice, and was much respected both in public and private life. In 1782 he published some essays on various departments of medicine in *De Commentarii*, 2 vols. 8vo. He also published an edition of his father's works, and added Mead's *Monita et Precepta Medica*, to which he added numerous annotations. There is a small marble bust of *Euscipius*, which was presented to this college by Sir John Wincham, of Cambridge, which was the bequest of Sir Clifton Wincham. He died at Hammersmith, on the 9th of January, 1794. (Eloy, *Dictionnaire Hist. de la Medicine; General Biographical Dictionary*).
Winwood, Kent, sometime one of the Principal Secretaries of State; comprehending likewise the negotiations of Sir Edmund Winstanley, Sir Nehemiah Crouch, Sir Charles Cavendish, Sir Thomas Edmonds, Mr. Trumbull, Mr. Cottington, and others, at the Courts of France and Spain, and in Holland, Venice, &c. Wherein the principal transactions of those times are faithfully related, and the policies and intrigues of the French and Spanish ambassadors, laid open to the world. The whole scene is drawn in an exact series of time. By Edmund Sawyer, of Lincoln's Inn, Esq., and one of the Masters in Chancery.'

(Biographia Britannica, Supplement)

WINZET, or WINGET, NINIAN, a Scottish ecclesiastic, is supposed to have been born in Lunenburg in the year 1518, and to have been educated at the university of Glasgow. In 1551 he was master of the grammar-school of Linlithgow, and soon afterwards, while he continued in that situation, he entered into holy orders. In 1561, on the establishment of the ecclesiastical power of the Reformation, he was cited before the Superintendent of the Lothians, to answer for his religious opinions, when, adhering to the doctrine of the Roman Catholic church, he was deposed from his office. In the following year he published "Certane" To the Church of Scotland, as a true and perfect defence of the Roman Catholic religion, and was, in consequence, excommunicated from the papal authority.

At a later period in the same year, and after Knox had addressed against him some controversial arguments from the pulpit, he attempted to publish a work called "The Last Word" against the usurp't authority of John Knox, and his Caluminae brethren, intrud' Prefecheouns, &c., but the Protestants had not made sufficient progress in religious toleration to have a free press at the disposal of their adversaries, and the copies of the work were seized in the printing-office. Winzet himself made a narrow escape, and the printer was imprisoned. The only fragment of this work which has survived to the present day is a copy of the first five leaves, preserved in the University Library of Edinburgh. The works of Winzet, thought it yurves, were refug'd in Flanders, and in 1563 he published at Antwerp 'The Buke of foucir thee Questions, touching Doctrine, Ordour, and Maneris.' This is a controversial tract, in which, though complaining of the usage he had received in the recesses of the country, he only subvers yair phantaisie and faction of faith, there is an air of gentleness which seems to have been peculiar to the disposition of the author, and is not characteristic of the controversial writings of the times. Winzet addressed himself to a different style of writing, and in his Scottish language he says to Knox, 'Gif ze, throw curiositie of novationis, hes forsoirt our auld plane Scots, quhill zour mother lerit zou, in tyms cuming I sally wryte to you mynd in Latin.'

Yet Winzet's own style shows nearly as great a divergence from the common way of writing of a century and a half after that of his master, though the latter made a nearer approach to the English of the sixteenth century. In 1576 Winzet was appointed abbot of the Scottish monastery of St. James', at Ratisbon. In 1592 he published 'Flagellum Sectatarum,' another controversial work, to which he added an attack on the 'De Jure Regni apud Scotos' of Buchanan, which is one of the earliest works in which the spirit of free inquiry then in operation as to religion was extended to politics. Winzet died on the 21st of September, 1592.

In 1794, a work, "Lives of Scottish Priests," i. 98-101: Memoir prefixed to Collection of Winzet's versified works, printed for the Maitland Club.

WIRE is metal elongated into the form of a slender cylinder. Sometimes it is so fine as to be termed, rather comparable to a thread, by the operation of wire-drawing, which consists in passing a piece of ductile metal through a series of holes, successively diminishing in diameter, in a hardened steel-plate called a draw-plate, so as to reduce its cross-section to the size and figure of the last or smallest hole, increasing its length at the same time in proportion to the diminution of thickness occasioned by the process. Though ordinary wire is cylindrical, the nature of the process of wire-drawing renders it available for the formation of any other required figure. An important application of the process to the production of other forms is to the manufacture of pinion-wire for timekeepers. This is produced of any required size and number of teeth, and the wire being cut to the required length, is first hardened, and then shaped to the form of the teeth required, by the portion used for the latter. By this means pins may be formed at much less expense than by the ordinary process of wheel-cutting. The grooved rims of spectacle-frames form another example of the useful application of the wire-drawing process, they being formed of wire made for the purpose.

Beckmann, in his 'History of Inventions and Discoveries,' devotes a long chapter to the history of wire-drawing, in which he observes that, in early times, metal rods were beaten out into wire; and the iron, brass, or copper, which were then divided into small slips by means of scissors or some other cutting instrument, these slips being subsequently rounded by a hammer and so as to form threads or wires. In confirmation of these remarks, he refers to the following passage from the account of Nahun, given in the third verse of the thirty-ninth chapter of Exodus, and to the fable of Vulcan forging a net of delicate wire-work for Mars and Venus, when detected by his illicit amour. He states distinctly that when this was first attempted, but argues that an allusion to gold and silver threads formed by the master in Muratori, that the process was not known in the time of Charlemagne, 'Nunc autem quo nos manentibus, ita dixit regin regis Nurnbergi, ubi in quibus, by the order of the emperor, the art of drawing wires had been invented, were styled 'wire-smiths,' but subse-quent the introduction of the drawing process their design was changed to 'wire-drawers,' or 'wire-millers,' and these appellations occur, as early as 1651, in the histories of Augsburg and Nurnberg respectively. Beckmann conceives that the invention of wire-drawing was assigned to the fourteenth century. In all probability the earliest drawn wire was made by hand, and was not disposed of the drawing wire without the intervention of hand, was introduced. Though the point is not certain, this ingenious machine appears to have first constructed at Nurnberg by a person named Esq., who kept it secret for some time, and only manufactured the use of it. Conrad Celtes, who wrote about the year 1535, relates these circumstances, and adds that the son of dolf was induced to divulge the secret, whereby he ascended his father that he was compelled to fly for his life to France. From this account it appears that the first wire-drawing machines were the pitch-pot and the pump, the year 1400. Nurnberg also gave birth to many quint improvements in the manufacture of various kinds of wire. The precious metals were undoubtedly the first made into wire; and perhaps brass and iron were the next. The wire machine that is generally mentioned is called a Engfrich, which is occasionally termed fil de Richard. Nothing however is known of Archal, and Menage suggests a different derivation for the name.

Anderson, under the year 1563, the granting of patents to certain Dutchmen or Germans for the procession in England of various manufactures, among which that of wire; and he states that prior to that time an English iron wire appears to have been drawn by hand, that strength, in the Forest of Dean, and elsewhere, and the quality of wire by foreigners brought the use of a drawing-wire and the quality of English wire was so bad that most of it was used in the country, as also was ready-made wool-cards and similar articles, was imported from abroad. By the year 1630, a manufactory for this particular wire was established, in a proclamation of Charles I. it is alluded to as a manufacture of long standing, and one which employed...
many thousands persons, and it is asserted "that English wire is made of the toughest and best Osmund iron, a native commodity of this kingdom, and is much better than what comes from foreign parts, especially for making wrougth-iron."

The proclamation then forbids the importation of foreign iron wire, and of wool-cards, hooks and eyes, and other articles made of it. Holland observes, that insignificant as hooks and eyes may appear, to be mentioned in a royal proclamation for strengthening the manufactures in a long previously, used in such great quantities as to cause a vast consumption of wire. Anderson subsequently states that the first wire-mill in England was set up at Sheen, near Richmond, by a Dutchman, in 1662. Holland observes that originally submitted to a quarter of an inch square, it is rounded on an anvil previous to elongation by the draw-plate. In whatever way the metal may have been prepared for the ultimate process of drawing, or what manner may be the motive-power employed in the process, it is essentially the same. The draw-plate is usually formed of a stony piece of shear-steel, about six inches long and an inch and a half in diameter, but being somewhat reduced in thickness toward the ends, like a cucumber, and flattened on one side. It is pierced transversely with several conical holes, the larger orifices of which open upon the flattened surface of the plate, while their smaller orifices are carefully finished to the size to which it is intended to reduce the wire. When the wire is fitted to, or tilted to a about a quarter of an inch square, it is rounded on an anvil previous to elongation by the draw-plate. The mode of preparing them a circumstantial account has been published by M. Du Hamel, whose directions are given at length by Holland, Hebert, and others. From the context, it appears that the French plates consist of a band or bar of wrought-iron, about two inches broad and one inch thick, covered on one side with a very hard composition called potin, which consists of fragments of cast-iron pots, broken wire, and charcoal. The broken iron and charcoal are exposed to heat until they are fused into a kind of paste, which is heated or fused ten or twelve times, and thrown into water to cool the tongues before by hammering. By this process the cast-iron is converted into a kind of steel, for yielding to the action of the hammer and the instrument by which the holes are enlarged and formed. One side of the wrought-iron bar is hammered to a furrowed surface, so as to produce a slight impression and to be covered, to the extent of about one-third of the width of the contrivance, by which the holes are reduced in size. The metal is reduced in the prepared potin; the whole is then wrapped up in a coarse cloth, which has been previously dipped in clay and water mixed to the consistency of cream, and finally put in the forge. Being more fusible than the wrought-iron, the metal is sooner reduced; and as soon as it begins to do so, the plate is withdrawn from the fire and gently hammered; and the heating and hammering are repeated alternately until the union of the two metals is complete, after which dry powdered clay is thrown upon the plate, for the purpose, it is said, of softening the potin. The plate is subsequently reheated, and extended by hammering to double its original length; the harder metal being so perfectly united with the other as to form a malleable alloy with it; and while the bar remains hot the holes are formed by the action of the hammer, and mixed with pieces of charcoal. In completing the holes, care should be taken to make them smaller and smaller by regular and almost imperceptible gradations, so that the work may not have to be reheated. After each of the holes is through by the plate-maker; the completion of the holes is then completed by drawing. Another mode of producing draw-plates, practised at one of the principal wire-manufactories in France, that of the Mouchel, at l'Aigle, in the department of the Oms, is by arranging several pieces of cast iron, or tin, with a lid, and filling the cavity with cast-steel. The whole is then covered with a hutting of clay, heated until the steel begins to melt, and worked in passing it backwards and forwards. For ordinary wire the rods are commonly reduced to a thickness of about one-eighth of an inch by this process. The slender rods thus produced are called, from their appearance, 'black wire,' to distinguish them from drawn or bright wire;' and, on account of its cheapness, such wire is preferred for coarse purposes in which it is either to be painted or concealed from view. It is commonly used by timber and joiners for the iron of a door or window, and various kinds of tin-ware and copper-ware, in which the tin-plate or sheet-copper is turned over or wrapped round the wire so as to cover it. The kind of cast-steel wire of which the best needles and some other articles are made, is not reduced in the above manner, but at a point slightly tilted to, or about a quarter of an inch square, it is rounded on an anvil previous to elongation by the draw-plate.
with a hammer in a similar way to that above described. When draw-plates have been hammered up several times, to reduce holes worn too large by use, they become so hard as to require annealing. For this purpose, a pair of cylindrical drawing plates will vary somewhat in hardness; but those which are too soft for drawing iron wire may be used for brass, while the very hardest are reserved for steel wire.

In drawing wire by hand the draw-plate is laid against two upright pillars fixed on a bench or table, and, the extreme end of the wire to be drawn being so reduced as to enable it readily to pass through the hole, a small portion is drawn through by a lever apparatus which resembles in its operation the mangle or rapping iron or rumpir, before described. When a sufficient length of wire has thus been brought through the plate, it is secured to a conical or cylindrical drum, which is mounted upon a vertical axis opposite to the hole in the draw-plate. The workman then holds one hand the coil of thick wire to be reduced, and the other a lever handle attached to the drum; and while he turns the drum so as to wind the wire upon its circumference, and consequently to draw it through the plate, it imparts a kind of twist to the wire which enters the plate, by a peculiar motion of the hand in which the coil is supported. In drawing coarse wire, which requires considerable power, the workman walks round the bench at each revolution of the drum, carrying the lever round with him; but for finer wire the apparatus is much lighter, being merely a few bricks, on which little injury is done the man power is used the winding-cylinders are turned by belv-gearing underneath the bench, and the coil of undrawn wire is placed on a reel. This apparatus is accompanied by an ingenious contrivance which allows the drum to fall out of the way of the wires, and with considerable ease to cease to revolve, as soon as the piece of wire is drawn completely through the plate. In some cases, as for pinion-wire, which would be injured by winding upon a drum, wire is drawn upon a long draw-bench in a straight line, the power, which is equalised by the use of a fly-wheel, being applied to a winch-handle which, by means of spurs, imparts motion to an horizontal rack.

Between the repeated drawings which are necessary to reduce wire, especially of the finer or smaller sizes, to the requisite form of tenacity, it is necessary to give heat and anneal it, by which processes the fibrous character imparted by the drawing is in some degree removed before a fresh extension takes place. The annealing-oven should be so contrived as to avoid oxidation as much as possible. While drawing, if small, the wire is wrapped into cards or into lengths of about a foot in formity, the thickest being placed in such a situation as to receive most heat; and after leaving it the wire must be secured or washed to free it from whatever oxide may have formed upon its surface. An improved furnace for this operation is the one described by Dr. Mouchel, is described by Holland. In order more perfectly to remove the oxide (which, if left on the surface, not only impairs the appearance and the strength of the wire, but also injures the draw-plate) the coil of wire is sometimes immersed in a bath of tar-red or state-beds during the operation of drawing. A curious and important discovery was made years since at an eminent wire-manufactory, where, in order to beat the acid liquor in which the annealed wire was steeped, some ingots of brass which happened to be in the vicinity for want of a more immediate use were made red-hot and used to heat and anneal the wire, by which process the fibrous character gained by the practice of the factory is in some degree removed. It was subsequently found that, owing to the action of the acid upon the brass, the iron wire had become coated with a thin film of copper, which greatly facilitated its passage through the draw-plate, acting, it would appear, like a lubricating medium. So important was the advantage gained, that the practice has been universally adopted in that factory of using a weak solution of copper in the acid liquor in which iron or steel wire is washed. The film of copper is entirely removed by the last annealing (which is also facilitated by the free use of grease, or, for the finer descriptions of wire, wax, to lubricate the wire as it passes through the plate. The repeated anneals of steel-wire would deprive it of too much of its carbon, but for the practice of it, which is not seldom employed, it would involve the formation of carbonaceous substance, so as to furnace. The rapidity of the drawing process must vary with the quality of the metal, the hardest steel wire requiring the slowest motion; but as each successive drawing increases the fibrous or filamentous character of the metal, the rapidity of the extension may be safely increased as the wire becomes more and more attenuated. Dr. Ure states that iron and brass wires 0.3 of an inch in diameter can be completely drawn to a thickness only 0.025 inch per second; but that when reduced to 0.025, or as an inch, they may be extended at the rate of 40 or 45 inches per second; while finer wire of silver and copper may be drawn out from 60 to 70 inches in a second.

Even when made with the aid of the coil of iron or steel draw-plates will enlarge so much with wear as to render it impossible to draw any great length of wire perfectly uniform in thickness. To remedy this, Mr. Brockedon obtained a patent in 1815 for a method of drawing iron wire, which consists of drawing on other hard precious stones. Dr. Ure states that with a plate of this kind mounted with a ruby, pierced with a hole 0.0033 of an inch in diameter, a silver wire 170 long has been drawn so perfectly uniform, that so different could be detected either by weighing portions of equal length or by measuring with a micrometer.

Dr. Wollaston communicated to the Royal Society, in the year 1813, a method of drawing wire of extreme tenacity, suitable for use in telescopes. This he accomplished, in the first instance, by boring or drining a metal wire, longitudinally, with a hole one-tenth of its diameter, and then filling it with gold. The compound being drawn into wire sixtieth or sixtieth of an inch in diameter, the silver was afterwards dissolved in bimetal of a small number of fatty acids, the wire is obtained perfectly round in diameter. Finding the operation of drilling the steel rod very troublesome, he subsequently drew platinum wire, and cast the silver round it, treating the compound before. The extreme ductility of the precious metals is still more readily increased by annealing, and consequent drawing, so that it is commonly known as gold wire, but which is really formed of silver gilt; actual gold wire being made only for framework and a few other purposes. In the ordinary mode of making gold wire a silver rod about an inch in diameter is covered with lead-gold, and then extended by a machine to obtain the required tenacity by successive drawings and annealings; the proportion of gold allowed to a pound of silver being seldom more than 140 grains, and sometimes as little as 100. Fine gold wire is used for wrapping or twisting in the preparation of some of the fine glasses of the optician. The gold wire is, according to the number given to the wire, of a corresponding size. An ingenious kind of gauge for showing the actual diameter of wire is represented in Holland's work, consisting of two straight steel rulers fixed together with their edges in contact at one end, and separated at about the half of their length, and the thickness of the wire to be measured brought between them.

The narrow triangular space thus left between the edges of the rulers will receive a wire of any size not exceeding half an inch in diameter, while a series of equal diameters marked along the edge of one ruler will afford a scale according to the number given to the wire of the corresponding size. An ingenious kind of gauge for showing the actual diameter of wire is represented in Holland's work, consisting of two straight steel rulers fixed together with their edges in contact at one end, and separated at about the half of their length, and the thickness of the wire to be measured brought between them. The narrow triangular space thus left between the edges of the rulers will receive a wire of any size not exceeding half an inch in diameter, while a series of equal diameters marked along the edge of one ruler will afford a scale according to the number given to the wire of the corresponding size. Among the many uses to which wire is applied in the manufacture of wire-gauze or cloth is peculiarly important the one which is devoted to the manufacture of knitting nets and sailings (vol. iv. pp. 309, 310, English edition of 1814) which expresses an opinion that the art of knitting with needle may have originated in an attempt to imitate some of the ingenious inventions of statesmen, and the employment of screens, and alludes to some very old specimens of wire net-work plaited or woven in so exquisite a manner as to give rise to the tradition that the artists who made them were enabled by infernal agency to accomplish that which appears too difficult for human
skill. Plainer kinds of weaving are performed by a modi-
cation of the common loom, the coarser varieties of
seven wire-work produced being used for fences, phac-
masaries, corse rods hedges, &c., while the finer sorts
are employed for lanterns, sieves, flour-dressing machines,
paper-making machinery, window-blinds, &c. The prop-
erty which renders wire-gauze so invaluable in the safety-
amp has been taken advantage of by the chevalier Aldini
for remedying the disorders of the human body, a process
which, though very light, is in a great measure flame-proof.
Wire-gauze is also formed into dish-covers, baskets, and
other useful and ornamental articles, by pressing it between
moulds into the required shape, which it retains perma-
nently. It has been manufactured in this kingdom and
patented in this country several years ago by Mr. Goessel,
of the Haymarket, London. After being pressed into the
required form, the articles are strengthened and neatly
finished off by the addition of hoops or rings to their edges
before they are removed from the mold. Much iron and
brass wire is used also for the manufacture of bird-cages,
feeders, and other articles of similar character. Needle-
making is one of the most important applications of steel
wire; but some of the finest sorts are made into spring
springs, in which form they receive an augmentation of
value beyond the prime-cost of the material probably un-
paralleled in the whole range of manufacturing industry.
Of the delicate hair-like springs alluded to, which weigh
only 30 grains to the pound; and it has been repeatedly stated, though perhaps
now the statement may be hardly correct, that the value
of such springs is half a guinea each; so that while a
pound of crude iron cost but one halfpenny, a pound of
these steel springs bring near 20 dollars. This kind of
work is of great antiquity, and was formerly much
employed for caskets, needle-cases, trinket-boxes, baskets,
shrines, and various decorations for church furniture; but
it has in a great measure fallen into disuse, as its present
use in lace and embroidery is much more elegant.
One of the most elegant applications
of gold and silver wire is to the production of Maggire
or Filigrane work, to form which, according to Beckmann,
'fine gold and silver wire, often curled or twisted in a ser-
pentine line,' is melted, and the solutions plated on
each other and soldered together so as to form festoons,
flowers, and various ornaments; and in many places also
they are frequently melted together by the blow-pipe into
little balls, by which means the threads are so entwined
as not to cause the leaves forming the ornament to
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and on the north by gentle eminences covered with vines, protected from the bleak winds by the lofty wooded mountains beyond. In the immediate vicinity of the town there are productive gardens and orchards, and on every side neat farm houses and villages. Wisbech is open and comparatively improving town, and has broad and well-paved streets. This place owes its prosperity and its name, 'Baden,' to the celebrated hot springs, which were known to the Romans, and are spoken of by Pliny the Elder (Nat. Hist., xxii. 2.) Wisbech is on the site of a building called 'The Firkin Cross,' which was the butter market, the town having formerly had a considerable trade in butter, but the land in the neighbourhood is now nearly all under tillage, and the butter trade has consequently ceased. The market is chiefly for fish and poultry; one division of the upper part is the cheese-house, and the other division is the council-chamber of the burgesses.

The House of Correction was built in 1807. It has a tread-wheel erected at an expense of 600l., which acts as a flour-mill; the prisoners are generally about 30. In sessions-house, or shire-hall, is part of the same building, and in it the Lammans assesses and Midsummer and Epiphany sessions are held. The workhouse was formed in 1722, and is seated by 36 houses, at 2s. 6d. per week.

The town contains a large piece of ground called the green, the space on which the Castle, the barracks, and public buildings are erected. There are also several public charities in Wisbech, most of which were under the management of the corporation, but are now under trustees, according to the regulations of the Municipal Corporations Act.

There is a canal between Wisbech and Outwell, which was completed in 1792: it connects the Nene with the Ouse. Considerable sums have lately been expended in making the sluices at Wisbech, which is now river transport.

The navigation of the Nene to Wisbech had gradually become very difficult and dangerous, from the accumulation of mud and sand; but by cuts and other works has recently been much improved. The mills which used to force the water to the sea are no longer needed, and vessels can arrive at the quay of the port without material impediment. The vessels belonging to Wisbech in 1842 were 22 under 50 tons, of the total burtton 170 tons, and 56 above 50 tons, of the total burthen 436 tons. In 1841 the number of vessels which sailed coastways from the port were 840, total 39,317 tons; the number which entered the port were 1024, total 62,401 tons. In 1841 27 British and 15 foreign vessels, total 327 tons, of which 11 British and 3 foreign, total 58 tons, sailed for foreign ports. There is no colonial trade.

In 1840 the gross receipt of customs' duty was 8,981l.

The corporation, previous to the Municipal Corporations Act, consisted of ten capital burgesses, who were householders in the town. The burgesses were elected by the household freeholders. The whole number of the corporation, including the burgesses, in 1835, was 300, and the total population of the borough was 3,077. By the Municipal Reform Act Wisbech was divided into 2 wards, with
The Puget Sound, an inlet of the Pacific Ocean, is between the two great lakes lying east and north of it has been determined. Lake Michigan is 595 feet, and Lake Superior 627 feet above the Atlantic. The only point on the boundary between these countries begins on the shores of Lake Superior at the mouth of Pigeon River (48° N. lat.) and runs through a series of lakes connected with one another by short rivers westward to Rainy Lake and the Lake of the Woods. This river is formed by a meridian drawn from the south-western extremity of the Lake of the Woods to the Mississippi, which rivers it strikes below Lake Cass. Farther south the Mississippi divides Wisconsin from Iowa Territory. The area of Wisconsin is estimated at 95,000 square miles, or about 10,000 square miles more than Great Britain.

**Elevation of the Country.**—Wisconsin is more than 50 miles distant from the Atlantic in a straight line, and between 1070 and 1080 miles from the Juan de Fuca Sound, an inlet of the Pacific Ocean. The boundary line of the two great lakes lying east and north of it has been determined. Lake Michigan is 595 feet, and Lake Superior 627 feet above the Atlantic. The only point on the boundary between these countries begins on the shores of Lake Superior at the mouth of Pigeon River (48° N. lat.) and runs through a series of lakes connected with one another by short rivers westward to Rainy Lake and the Lake of the Woods. This river is formed by a meridian drawn from the south-western extremity of the Lake of the Woods to the Mississippi, which rivers it strikes below Lake Cass. Farther south the Mississippi divides Wisconsin from Iowa Territory. The area of Wisconsin is estimated at 95,000 square miles, or about 10,000 square miles more than Great Britain.

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Sac River and the Big Rapids the country changes into a fine prairie; a considerable part of the eastern slope and the valley is formed by a small bottom of oak, ash, and maple. The soil, which farther north is sandy, has here more consistence, and it is supposed that it would produce small grain in abundance; the bottoms are rich and fit for corn and hay. The Big Rapids on the rivers and woods are still extensive, but in approaching St. Anthony’s Falls the country is entirely barren or a prairie with scarcely any timber, except some scrub oak. The bottoms are very small.

After descending the Falls of St. Anthony the Mississippi enters a region of limestone. It runs in a bottom, which below Lake Pepin widens from 4 to 12 miles. This bottom is uniformly bounded by limestone cliffs, which are generally abrupt and often precipitous. Within the bottoms, especially in the vicinity of Lake Pepin, isolated hills and knobs of considerable magnitude based upon horizontal strata of rock and towering to various heights are frequently met with. The valley consists of prairie and woodlands alternating; the former are usually elevated above the level of the prairie with numerous trees, flowers; the latter are generally formed by deep and numerous rivers and watercourses, which give to that part of the country a hilly and broken aspect. At the back of them the country is diversified by hills and valleys; the hills are high and rugged, and contain timber; the valleys often present extensive flats, abounding in lakes, swamps and ponds. The soil is sandy and the vegetation not vigorous; the trees do not attain their full growth. This country is bounded on the east by a ridge of hills, which, near 44° lat., is called the Oochoo and Smokey Mountains, and in the west by the Lake Superior region of the Ojibway Mountains. Their altitude is estimated at 1200 feet above the common level, or about 2000 feet above tide-water. This hilly region lies near 90° W. long., and there originate the head-water streams of a great number of rivers and numerous lakes. The current of this river is less broken and rugged, the soil is less sandy, the vegetation more luxuriant, and the forest trees attain a more stately growth. Large tracts in this part of Wisconsin are considered fit for cultivation. The forests on the Oochoo and Wisconsin are composed of white pine, pitch pine, and white pine of excellent quality, but white birch, white cedar, spruce, and juniper are also common.

The best known portion of Wisconsin is that which lies contiguous to the State of Illinois. The country between the Kaskaskia and the Wabash rivers, which runs from east to west, is an irregular plain, elevated from 250 to 300 feet above the surface of the Mississippi, and consists of limestone, which is often rent by deep and nearly perpendicular chasms of considerable depth but little width. On the upper surface of the prairie protrude several high single hills rising from 200 to 600 feet above their bases, and from 600 to 1000 feet above the watercourses which run in the chasms. The highest of these hills is called Arnot Hill, and is stated to be 1414 feet above the surface of the Mississippi at the mouth of Wisconsin River. The greater part of this region is a prairie destitute of wood, and generally covered with a good turf. There are also many tracts overgrown with trees, especially stunted oak, but little timber. The wood is usually covered by a black mould, which has frequently a depth of from 4 to 5 feet, and to appearance all the qualities of a fertile soil. But no part of it has been cultivated, agriculture being at present limited to the bottoms of the rivers. The country run at a considerable general level of the country, especially that of the Wisconsin, which resembles the bottom of the Mississippi, but is only from one mile to two miles wide.

The country along the shores of Lake Michigan has a different appearance, as far north as the small bay into which the river Michigan falls, but is limited by the great level and low plain which surrounds the southern extremity of the lake, and extends from St. Joseph’s River to the Waukegan. It is an extensive flat stretching far inland, with woods and swamps. The soil is apparently good, but the chilling northern winds which blow from the lake charged with vapour frequently spoil the crops. Farther north the shores of the lake are skirted by high sand-hills, which sometimes extend near and sometimes farther from the river, but probably form the country which is traversed by the Milwaukee and Waukesha Rivers, against the winds blowing from the lake. North of 44° lat. and up to Green Bay, and the boundary of Michigan, the shores of the lake are somewhat rocky, and the level soil on the sandhills is often too barren to be fertile; the country farther inland along the Fox River, and towards Winnebago Lake, has a considerable degree of fertility.

Rivers and Lakes.—The largest and most important are in the lake Michigan, in the western part of the State. Wisconsin, as the name of the country is derived, runs through the middle of the southern half. It flows from some lakes north of 45° lat., and runs first nearly 150 miles in a southern direction, when it turns to the south-west and west, and, after coursing a distance of 700 miles, it empties into Lake Michigan near Prairie du Chien. When swollen by a freshet it affords an easy navigation for boats of considerable burthen for more than 100 miles from Prairie du Chien to Lake Superior, and it changes its course into a south-western course. At this place is a portage of one mile and a half, across a flat meadow, which is occasionally subject to inundation, to the Fox River and Green Bay, thus affording a navigable connexion between Lake Michigan and the Mississippi, though the boats have been known to pass. The current in the lower part of the river is rapid, and like the Mississippi it contains numerous islands; when the water is low, the navigation is obstructed by shaws and sand-banks.

The Chippewa, a tributary of the Mississippi, upon its entrance, if of great magnitude, is the Fox River, whose head-waters lie to the east of the great bend of the Wisconsin. From the portage above-mentioned between the two rivers it runs northwest to a series of lakes extending from west to east. Issuing from these lakes the Fox River runs north almost 400 miles from the north by the largest of its affluents, the Wolf River. The united river passes through a small lake into Winnebago Lake, which is 30 miles long and nearly 20 miles across in the widest part. It leaves this lake north-westerly, and contains numerous chasms, and rapid streams which obstruct navigation, but do not interrupt the remainder of its course lies to the north-east, and falls into the most southern recesses of Green Bay. The navigable part of this river from the portage to its mouth consists of the, which is 300 miles long.

Of the other rivers we shall only mention three, which fall into the Mississippi, the Black River, the Chippewa and St. Croix Rivers, Black River drains a valley, in which the surrounding hills are covered with fine forest and contain the largest high plains of this part of the country, and from the north to the south is as large as St. Louis in Missouri. The Chippewa and St. Croix rise near some of the tributary streams of Lake Superior, and this circumstance has given them some commercial importance, as traders generally choose one of these rivers for their route.

The number of lakes which are dispersed over the country between the Mississippi River and Lake Superior is very great. In some parts they cover more than half the surface of the lake and the watercourses which give them a considerable influence; but there are also several larger lakes. The largest of these lakes of Woods, are the Plumeau Lake and Tomahawk Lake, which each of sends its waters to the Chippewa River. The country south of 45° contains the lakes of this part of the country which lies between the great bend of the Wisconsin River and Green Bay, and is drained by Fox River. This tract contains numerous lakes, among which is the Winnebago Lake.

Climate.—The winters are very cold and the summers very hot. The long and cold winters prevent wheat from succeeding in any part of Wisconsin, though the grain and plants which are sown in spring succeed very well.
The difference between the two seasons is much greater in the northern countries of Europe which are under the same degree of latitude and nearly as elevated as Wisconsin. This is evident from the subjoined table, which is founded on the several meteorological observations made at Fort Shelling, at the mouth of St. Peter's River, at Prairie du Chien, near the mouth of the Wisconsin, and at Fort Howard, at the mouth of Fox River. We add for the comparison the result of the meteorological observations made at Wexford, situated on the table-land of Smaland in southern Sweden.

**Monthly mean temperature of Fort Shelling, Prairie du Chien, Fort Howard, and Wexford.**

<table>
<thead>
<tr>
<th>Month</th>
<th>Fort Shelling</th>
<th>Prairie du Chien</th>
<th>Fort Howard</th>
<th>Wexford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>2° 26'</td>
<td>2° 20'</td>
<td>3° 40'</td>
<td>2° 68'</td>
</tr>
<tr>
<td>Jan</td>
<td>1° 48'</td>
<td>1° 30'</td>
<td>2° 30'</td>
<td>2° 68'</td>
</tr>
<tr>
<td>Feb</td>
<td>0° 03'</td>
<td>0° 21'</td>
<td>2° 40'</td>
<td>3° 16'</td>
</tr>
<tr>
<td>Mar</td>
<td>0° 39'</td>
<td>0° 39'</td>
<td>3° 40'</td>
<td>3° 16'</td>
</tr>
<tr>
<td>Apr</td>
<td>1° 47'</td>
<td>1° 47'</td>
<td>3° 40'</td>
<td>3° 16'</td>
</tr>
<tr>
<td>May</td>
<td>2° 27'</td>
<td>2° 27'</td>
<td>3° 40'</td>
<td>3° 16'</td>
</tr>
<tr>
<td>Jun</td>
<td>0° 39'</td>
<td>0° 39'</td>
<td>3° 40'</td>
<td>3° 16'</td>
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<tr>
<td>Jul</td>
<td>0° 39'</td>
<td>0° 39'</td>
<td>3° 40'</td>
<td>3° 16'</td>
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<tr>
<td>Aug</td>
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<td>0° 39'</td>
<td>3° 40'</td>
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<tr>
<td>Sep</td>
<td>0° 39'</td>
<td>0° 39'</td>
<td>3° 40'</td>
<td>3° 16'</td>
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<tr>
<td>Oct</td>
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<td>0° 39'</td>
<td>3° 40'</td>
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<tr>
<td>Nov</td>
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<td>3° 40'</td>
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<tr>
<td>Dec</td>
<td>0° 39'</td>
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<td>3° 16'</td>
</tr>
<tr>
<td>Year</td>
<td>0° 39'</td>
<td>0° 39'</td>
<td>3° 40'</td>
<td>3° 16'</td>
</tr>
</tbody>
</table>

During the three winter months, and even in November, the cold in Wisconsin is so intense, that the thermometer frequently descends below zero, which very seldom takes place in Wisconsin; however the temperature rises rapidly in the month of March, much more so than in any part of Europe, and this seems to be the case in all parts of North America, but more especially in those west of the Appalachian Mountains, where the warmth increases more rapidly during March and April. Accordingly we find, that the spring is much warmer in these countries than in Europe, in places which have the same mean annual temperature. On the other hand, the decrease of heat in the months of October and November is also greater.

The best road to the interior is that situated near the shores of Lake Michigan are from the south-west for at least ten months in the year. But on the banks of the Mississippi the north-west is the prevailing wind, except in May and June, when the south-east is more frequent. At Fort Shelling however it is much more frequently replaced by a south-west wind. Thunder-storms are frequent, especially at the beginning of the spring and towards the end of the summer.

**Productions.**—As the number of agricultural settlements is small, and of very recent date, we are not yet fully acquainted with the agricultural productions that may be raised. Indian corn is said to succeed in a few places. Hitherto only oats and potatoes have been raised to any extent. In many of the numerous lakes and swamps which border the Lake Superior, and the British boundary, wild rice grows in abundance. It is collected by the native tribes, and used by the whites, who reside in these parts as traders.

The soil is fertile, and contains white, black, red, and post-cals, buckeye, walnut, sweet-pipe, lime-tree, cotton-wood, white, blue, and black ash, elm, red, maple, aspen, willow, elm, and the different kinds of pine before mentioned, white birch, and yellow cedar, spruce, and juniper. The prairies in the southern and western parts are covered with a fine turf, and afford good pastures for cattle and sheep.

Swine, and dairy cattle, have been introduced, appear to thrive. Cattle and sheep begin to be numerous. The terraces, which inhabit the northern districts, keep a few domestic animals, but the whites, who reside in the southern and western parts, keep but few, the number being of several kinds. In the northern districts are buffalo, elk, and deer in large numbers; but these animals are rare in the southern districts. Bears, wolves, and foxes are still numerous. The black and silver fox are greatly prized for their skins. The other animals are the bear, otter, mink, muskrat, and mink-rat, all of which are numerous only in the northern districts. The lakes, swamps, and rivers abound in water-fowl, such as swans, geese, ducks, and teal. There are also eagles, falcons, storks, wild turkeys, and partridges. Fish abound in the northern lakes. The river thermometer, which weighs from 4 to 6 pounds, and is very numerous in some of the northern lakes. The river abounds in sturgeon. Rattlesnakes occur, but they are not numerous.

The mineral riches of this country begin to be turned to account. It may be observed here, that it was discovered that in the southern districts of Wisconsin and the north-western corner of Illinois veins of lead occurred; and since that time the mines have been worked with great success. Their produce in 1829 had risen to thirteen millions and a half of pounds, and in 1839 to twenty-two millions. In the same part copper is found, and this metal has also been extracted, but not yet to any extent. At Mineral Point (42° 50' N. lat.) copper ore to the amount of 50,000 lbs. was shipped on the Mississippi for Swansea in 1838; and it is stated in the Report to Congress that this ore contained more than twice the quantity of metal which is contained in the ore obtained from the mines in Cornwall. The veins which yield copper ore contain besides quantities of zinc and calamine, of which however no use is made. Iron ore is also stated to be common, but it is not worked, and the small quantity which is consumed in the country is brought from Tennessee. There is also black lead, chalcedony, jasper, and corals. Good building stone is obtained from the limestone cliffs.

**Inhabitants and Population.**—Though the aboriginal tribes which once lived on the east of the Mississippi River have been removed to the countries west of it [North American Indians, vol. xxvi, p. 299], the tribes that have been established here still keep their footing in Wisconsin. Their removal was not necessary, as there is no agricultural settlement of the whites north of a line drawn from the mouth of Wisconsin River to Green Bay. In the northern districts of this country there are still copper, silver, and lead mines in the north-west and of Potawatomis; but the whole number of the Indian population probably falls short of 10,000 individuals. According to the census of 1840, the white population amounted to 30,540. Fenno, which was one-half of French and English origin. In the beginning of the last century, the French traders in furs had taken possession of the Island of Macoun Isaac, in the straits of that name, which unite Lake Michigan to Lake Huron, they discovered that Indian corn was raised in the southern part of the Wisconsin River; and accordingly they gradually settled small colonies at the mouth of the Fox River, on the portage between this river and the Wisconsin, and at the mouth of the last-mentioned river. The descendents of these traders turned to agriculture; and even after the beginning of the present century these Frenchmen were the only whites in Wisconsin who were agriculturists. Since that time the discovery of the lead mines has attracted many settlers from other parts of the United States. It is stated that about 2000 people are now settled in the mines.

**History, Government, Towns.**—Wisconsin was discovered by the French from Canada towards the end of the seventeenth century, as is related in 'Hennepin's Travels.' In 1836, when the French were expelled, the Spanish government was organized. The legislative assembly consists of a council of thirteen members, elected for four years, and a house of representatives of 25 members elected for two years. The governor, who is also superintendent of Indian affairs, is appointed by the federal government, and also the judges. At the country has only recently been settled, no towns have yet had time to rise. The seat of the government is at Madison, situated near the great bend of the Wisconsin; the seat of the county is Milwaukee, built at the mouth of the river of the same name, but it contained, in 1840, only 1712 inhabitants. Since the territorial government has been introduced, those districts in which several white settlers have been introduced, those districts are organized into counties, of which, in 1840, there were twenty-two. These counties occupy the tract which is south of the Wisconsin River.
along the Fox River up to its mouth, and the district watered by the Milwaukee River. The remainder of the country is not yet formed into counties.

(Pike's *Exploratory Travels through the Western Ter- ritories of North America*, by: *Kenton's Narrative of an Expedition to the Source of St. Peter's River, &c., under the command of Long; Report to Congress on the Mineral Lands of the United States, 1839 and 1840; *The American Almanac for 1842; Carver's Travels.*)

WISCONSIN OP. [Jesus, Son of Sirach; Solomon, Wisdom op.]

WISE, MICHAEL, one of the most justly admired of our church composers, was born in Wiltshire, and was among the first set of Children of the Chapel-Royal at Westminster. He was chosen as the organist and master of the choristers in the cathedral of Salisbury in 1668. Seven years later he received the appointment of Gentleman of the Chapel-Royal; and in 1686 he added to his other offices that of almoner of St. Paul's Cathedral, including the mastership of the choristers. He was a great favourite of Charles II.; but it is said that, presuming too much on the notice of royalty, he incurred the king's displeasure, and was for some time suspended from his situation at court. The man says Sir Henry Wotton, was of a compleatness, and this, added to his high musical talents, may have recommended him to the favour of the "Merry Monarch." His end was tragical; for, quitting his house late at night in a state of great irritation, he was stopped by the police on the way from him entered into a quizzel, and was killed in the affray.

The compositions of Wise are among the glories of our cathedral music. He added melody to science, and in setting sacred words evinced a much judgment as genius. He composed, for instance, "Prepare ye, O Zion, the way of the Lord," and "The ways of Zion do mourn," have lost none of their charms by use or age, and are still listened to with admiration by all who hear them and whose feelings are attracted to church music of the most elegant and expressive kind.

WISEMAN, RICHARD, lived in the seventeenth century; he became first known as a surgeon during the civil wars of Charles I., and was the companion of Prince Charles when a fugitive in the Netherlands, England, and Scotland. He was afterwards a surgeon in the Spanish navy for three years, and returning to England, he was present at the battle of Worcester, where he was made prisoner. He was liberated in 1652, and then took up his residence in London. At the Restoration, Charles did not forget his companion, and he was made surgeon-surgeon to the king. He was an observant judicious surgeon, and his publications on various diseases were read by the profession with much acuteness. In this work he collected his views into one volume, and published them with the title, "Several Surgical Treatises on Tumours, Ulcers, Diseases of the Anus, Scrofula, Wounds, Gunshot-wounds, Fractures and Luxations, and Byphilis," 2 vols. 8vo. This work is remarkable for being one of the first attempts at the period in its kind, in which the subject was treated by one single eye to the advancement of medical science, he records everything that occurred, whether successful or unsuccessful, in the treatment of his cases. He suffered in early life for his attachment to royalty, and he will perhaps be excused on this ground, if his feelings are considered, for having advocated the efficacy of the royal touch in cases of scrofula. His works have always been considered valuable contributions to surgical knowledge, and the two volumes in which they are contained have gone through several editions. These treatises are the *Scrofula, Wounds, Gunshot-wounds, Fractures and Luxations, and Byphilis.*

WISHART, GEORGE, called "The Martyr," a champion of the Reformation in Scotland, is supposed to have been a son of James Wishart of Pitarrow, justice-clerk during the reign of James V. The time of his birth is not known. At the beginning of the sixteenth century he was master of a grammar-school at Montrose, where he introduced the study of Greek. Whether he ever took orders is a point undetermined. He began to diffuse the doctrines of the Reformation in Montrose, but being accused of heresy by the enemy which he roused, he fled to England. He preached the same doctrines at Bristol in 1538, but sterner measures seem to have been there adopted towards him, and he re- ceived and publicly burned his faggot. In 1543 he was at Cambridge. According to a notice of his character, apperence, and habits at that time, by his pupil Emery Tynley, he was a tall man, pale headed, and on the same a round French cap of the best. Judged of melancholy complexion by his physiognomy, black hair, long beard, comely of personage, well spoke after his country of Scotland, courteous, lowly, lowly, and did to talk of learning, and was well travelled. He is further described as charitable to the poor, and abstinent to the extent of austerity. In July, 1543 he returned to Scotland along with the commissioners who had been sent to England to treat for a marriage between Prince Charles and the Infanta, but the negotiations, brought on by the heads of the Reformation party, he now preached with boldness and fervour in Dundee, Perth, Montrose, and Ayr, creating popular tumults, which ended in the destruction of sixty of the Reformation churches in the counties of Angus and Fife. The English authorities with coming vengeance when they interfered with his proceedings. The limidlity which attended him while he was an obscure propagator of his opinions, even now that he exercised a wide influence on the popular mind and filled a large place in the eyes of noble men, to have been succeeded by a resolute spirit of defiance and a contempt of danger. The view which the impartial narrator must take of Wishart's character has lately been materially changed by the discovery of documents. A great part of the evidence against him has been dis- proof, that he was engaged in the plots against Cardinal Beaton's life. This charge, stated by two old Scottish biographical authors, Dempster and Dr. George Maitzen, whose accuracy is justly doubted, was repeated by a Roman Catholic historian, the Cardinal, and by a British Ht of Queen Mary, p. 40, and has been amply illustrated from original documents by Mr. Tytler. In a series of letters which show that there were several parties who were prepared to assassinate the author of the Act of Abjuration, the author of Henry VIII. to perpetrate the deed, and his promise of protection and reward, one signed by the earl of Hertford, Holgate bishop of Landaff, and Sir Ralph Sadler, and addressed to the king, dated 17th April, 1544, has been published; but according to the request, he have taken order for the open of the said Wyshart's papers, and that the delivere of such letters as he hath to your majesty from the said Brunstone, and also for the declaration of the said Brunstone, which, as I can perceive by him, consists in two poyntes: one is that the Lorde of Graeme, be- sauerd of Scotland, and the other that Charles the secon, and John Charters, wold attempt to pre- pend or see the cardinal at some tyme when he shal pass through the Pyfande, as he doth sundrye times. As for the first matter, sir Ralph Sadler said, 'this highnesse, repeting the fact as me to be set forward expressly by his majesty, will not seem to have to do in it, and yet not misliking the offer. In the end however the two persons whom Wishart was related to have been tried at the time when they were the memory of Beaton, the lord of Brunstone's house, four miles from Edinburgh. Venturing to preach in the town of Haddington, he took refuge with another supporter, Cockburn of Ormiston, in
whose house he was seized by the cardinal’s troops, and conveyed to St. Andrews. He was immediately put on trial for heresy before a special ecclesiastical council; Arran, the governor, having refused to give the predica- tions the countenance of the civil power. He was con- demned to be burned at the stake, and the sentence was executed at St. Andrews on the 28th of March, 1646, amid the portentous murmurs of the people.

It was a fully-fledged prophecy that tradition, as so often fulfilled; and his prophecy was one, that Bontoun should soon hang in igno- miny from the same window whence he was witnessing the execution; and the circumstances above detailed showed that he was a prophet from duteous lips, although without that event being without possessing the gift of prophecy. (Mackenzie, Lives of Scots Writers, iii. 9–19; Tytler, Hist. of Scotland, vol. v.; Lyon, Hist. of St. Andrews, ii. 1684–1696; McRie, Life of Knox, period ii.)

WISHART, George, an ecclesiastical and biographical writer, is said to have been born in Haddingtonshire, in 1609, and to have studied in the university of Edinburgh. In 1639 he was a clergyman in St. Andrews, when, refusing to take the covenant, he was deposed from the mini- stry. On 26th January, 1646, he is found petitioning the Scottish parliament as ‘sometimes minister at St. Andrews, and lastly at Newcastle, now prisoner in the common jail of Edinburgh, beggining to mortis, since he and his wife were accused of being Papists and heretics.’ He was, he says, ‘a young man, born 1609, and educated in the use of the law, and now reduced to the necessity of begging for the elegance of its Latinity. It was translated into English in 1652, and the author is supposed to have been the translator. There is in the Advocate’s Library a MS. continuation of the work to the death of Montrose, which has been conferred by the degree of Bachelor of Latin; but a translation of it was appended to a translation of the first part in 1720, and both were re-translated and published by Raddiman in 1756. A new edition of this translation was published at Edinburgh in 1810. After his patron’s death, Wishart became chaplain to Elizabeth, the Electress Palatine. At the Restoration he was made rector of Newcastle, and in 1662 was consecrated bishop of Edinburgh. Though he had himself suffered persecution, and in his writings was the advocate of, and at the same time the supporter of, the intolerant policy of Charles II’s govern- ment, and had recommended leniency to the Covenanters. He died in 1671. (Keith, Catalogue of the Bishops of Scotland; Lyon, Hist. of St. Andrews, i. 10–12.)

WISMAR, an important seaport in the grand-duchy of Mecklenburg-Schwerin, is situated in 53° 58’ N. lat. and 11° 58’ E. long., on a bay of the Baltic called the Wapich. It is surrounded with a wall and moat, and has four gates towards the land and four towards the harbour. The har- bour is very safe, but not deep enough for large vessels. Hempel however says, ‘the harbour is one of the best on the coast of the Baltic, not only having sufficient depth, but also being wide and commodious. In 1818, on the 25th of March, it was said of the road. It is a tolerably well-built town; the streets are in general straight, sufficiently broad, and ex- tremely well-paved. The houses in the principal streets are almost all of brick, but in general with the gable ends turned towards the sea. The town has the three churches, all in the Gothic style; the town-hall, a handsome modern edifice; the school-house, a very large and lofty stone building; the orphan asylum, and some other public buildings. The trade of Wismar, which had greatly declined with the revolution, has increased of late, and was, considerably increased in the last 30 years, though it is by no means to be compared with that of Rostock. Between 30 and 300 ships annually arrive and leave the harbour, which is a pilgrimage of importance. But Hempel (in 1837) complains that ‘the duties demand a florishing and secure maritime com- merce very difficult, and almost impossible. Besides the duties levied by the town, there is an import duty levied by the government, so that altogether the duties are double those paid at Rostock. The merchants of Wismar are still considered in the Mecklenburg customshouse as foreigners, so that they cannot compete with those of Rost- stock, and still less with those of Hamburg and Lübeck. Colonial produce imported by sea pays 5 per cent., whereas at Lübeck it pays only 1 per cent. It is therefore no won- der that the merchants of Rostock produce by land from Hamburg, Lübeck, and Rostock, by which they save at least 3 per cent., because they thus avoid import duty by sea, and have only to pay the town duty. The imports by sea are chiefly confined to Swedish productions, which are especially corn, fish, sugar, and tobacco, and the products of distilleries, tobacco manufactures, and some of linen and yarn; many of the inhabitants derive their subsistence from agriculture, and the fisheries in the Baltic. The exports are especially corn, but chiefly by Dutch ships; this privilege was induced by the countess of Mecklenburg, for the sake of some small capital which she had been allotted by Sweden, to which it had been assigned by the peace of Westphalia (1648), with its territory and the little island of Poe, to Mecklenburg Schwerin for 1,200,000 dollars banco.


WISTAR, CASPER, was born at New Jersey in America, where his father was a glass manufacturer, in the year 1776. His mother was a gentlemaness, and a member of the Society of Friends, of which society Wistat remained a member. He was educated in Philadelphia at the school founded by William Penn, and commenced his medical education in that city. In 1792 he received the degree of bachelor of medicine, and afterwards came to pursue his studies in Europe, and graduated in medicine at Edinburgh in 1796. His thesis was entitled ‘De Animo demissio.’ He returned to his own country in 1797, and when the college of Surgeons of Philadelphia was revived, he was appointed professor of chemistry and physiology, and delivered the courses of lectures on these subjects in 1789 and 1790. He was afterwards appointed to share the chairs of anatomy and surgery with Dr. Shippen and Dr. Shurtleff, and at the same time filled one of these chairs devoted on him. He was successively appointed physician and consulting physician to the dispensary, and physician to the hospital, of Philadelphia. In 1818 he was elected president of the American Philo- logical Society. He published several works on pharma- cine and anatomy: amongst others, Remarks on the Fever of 1783, and Memoirs on the Rhinum Bone, and on the Remains of an Animal belonging to the genus Bos.' In 1812 he published, in 2 vols. 8vo., A System of Anatomy, a work embracing the subjects, anatomical and physiologi- cal, which constituted his course of lectures in the college. He was very successful as a teacher, and his lectures were always well attended. He died on the 22d of November, 1838, which was the year in which he performed professional duties. He was married twice, and left behind him a widow and two children. (Encyclopaedia Americana.)

WISTARIA, a genus of plants belonging to the natural order Leguminosae, named by Nuttall in honour of Cas- par Wistar, professor of anatomy in the university of Penn- sylvania. This genus has the following character. The leaves are unevenly pinnate, and without stipules. The flowers are arranged in terminal racemes, and the lower the sepals are accompanied by bracts which fall off as the flowers expand. The calyx is cam- panulate, somewhat bilabiata, the upper lip has two short teeth, the lower lip three teeth, which are all diadelphous; a neck- tariferous tube girds the stipe of the ovary; the legume is coriaceous, 2-valved, l-celled, and rather torulose. The species are deciduous twining shrubs, natives of North America and China. They grow vigorously in Great Bri-
tain, and form when in flower the handsomest ornaments of our gardens. The following are the species:

1. **Arctomys (Spermochnus)**, New, Shrubby Wistarja, has the wings of the corolla such furnished with two auricles; the ovary glabrous; the flowers odoriferous. This is an elegant climbing plant, and is a native of Virginia, the Carolinas, and Illinois, in boggy places. The flowers open from July to September. They are of a bluish-purple colour, the standard having a greenish-yellow spot at the base. They give out a sweet scent.

2. **W. Chinesis**, Chinese Wistarja, has the wings of the corolla furnished with a margin; the ovary glabrous; the flowers large. This plant is a deciduous twiner, and is a native of China, and was introduced into this country in 1816. It flowers in Great Britain in May and June, and sometimes produces a second crop of flowers in August. The flowers are larger than in the last species, and are of a paler colour and hang in looser racemes. This plant is one of the most elegant additions that have been made to British gardens during this century. It was introduced into England by Captain Robert Webber and Captain Richard New, having formerly flourished in the plantations of Canton at the same time. The first plant that flowered was reared at the Rook's Nest near Godstone, in Surrey. From this plant the splendid specimen of this shrub which is now growing in the garden of the Horticultural Society at Chelsea, and a cutting has been planted against a wall 11 feet high, and the branches extend on each side of the trunk to a distance of nearly 100 feet. This plant, on account of its rapid growth and hardy habits, is getting very common in England, and will probably soon be regarded as the handsome flower of the season. This species was originally called *Glycine Chinesis*, a name which in some places it still retains.

3. **W. floribunda** is known by its glabrous stems and leaves, which are nearly round, and its hairy flowers. It is a native of Japan. It is represented as an elegant plant, but has not yet been introduced into the gardens of Europe.

The species of Wistarja are not difficult of cultivation; they are hardy climbers. They flourish most in a light rich soil, and should be trained against a south wall, which they will frequently cover with a profusion of blossoms. They may be propagated by cuttings or layers.

**WISTONWISH**, Arctoma (*Spermochnus*) Ludoviciana, is a species having procured in consequence of the different views of zoologists with reference to this animal, it becomes necessary to lay before the reader some of the descriptions and opinions extant concerning it.

**Description.**—A light dirty reddish-brown above, intermixed with some white and a forefoot and tail coat darkening to reddish, then bluish-white, then light reddish, then grey at the tip. Lower parts dirty white. Head wide and depressed above, eyes large, inner ear short and truncate; forefoot long and black; a few bristles projecting from the anterior portion of the superior orbit of the eye, and a few also from a wart on the cheek; nose somewhat sharp and compressed; hair of forelegs, throat, and neck not dusky at the base. Feet five-toed, covered with very short hair, armed with rather long black nails; external toe of forefoot nearly reaching the base of the next, middle toe half an inch long. Tail rather short, banded with brown at the tip, the hair, excepting near the body, not plumbeous at the base. Tail nearly equal in length, including the fur of the tail, 19 inches 4 lines.

Dark brown colour except their bellies, which are white; tails not so long as those of the grey squirrels, but shaped the same.

Head resembling the squirrel in every respect, except that the ear is shorter; tail like that of the ground-squirrel; toes long; fur fine, long hair grey. (Petit Chien.) Weight three pounds, colour uniform bright brick-red and grey, the former brighter; under side of the neck and belly lighter than other parts of the body; legs short, breast and shoulders wide; head short and muscular, terminating more bluntly, wider, and flatter than the common squirrel; ears short, having the appearance of amputation; jaw furnished with a pouch to contain and hold; tail of the common squirrel: five toes on each foot, the two outer much shorter than those of the forefeet, long, sharp, well adapted to digging and scratching. From extremity of nose to end of tail one foot five inches, of which tail occupies four. (Barking Squirrel, Lewis and Clark.)

Lewis and Clark makes of the Missouri and its tributaries.

This, according to Dr. Richardson, is the *Prairie dog* or *Gass*; *Prairie dog* or *Wistovitch* of Pike; *Petit chien*, *Prairie dog*, *Barking squirrel*, and *Burrowing squirrel* of Lewis and Clark, but not the *Burrowing squirrel* of the third volume; *Cynomys ludovicianus* of Old and Young. *Cynomys socialis et cinereus* of Rafinesque-Smalts; *Missouriensis* of Ward; *Arctomys latrans of Hale*; and *Prairie Marmot* of Godman.

This is the most that the best accounts of this animal, which has obtained the attention of all the apppellations since 1807, are given by Lieut. Pike and Captains Lewis and Clark. He further remarks that M. Rafinesque, considering the *Petit chien* briefly noticed by Lewis and Clark in their first volume, to be distinct from the *Prairie Squirrel* more fully described in their third, drew up from their notices the characters of his *Cynomys socialis et cinereus*. 'Dr. Harlan,' says Dr. Richardson, is continuation, has given the name of *Arctomys ludoviciana* to *Cynomys socialis et cinereus*, at the same time treating of the *Arctomys Ludoviciana* as a separate species. An alluring perusal of Lewis and Clark's narrative however has led the conclusion that in the passages cited above these travelers speak only of one species of *Marmot* under the name *Prairie dog*. They do not obtain a specimen, and its characters therefore have not been given. It is only at the time to the plains of the Saskatchewan, from the general colour of the animal, and from the description of its earth, it most probably was the *Twany Marmot* of the work. *Arctomys ludoviciana* of Murra, a rare animal confined to the *Spermochnus* of M. F. Cuvier; but the character given by the latter author are more precise and more distinctly drawn up.

Habits, &c.—Mr. Say states that this interesting animal has received the name of *Prairie dog* from a fancied resemblance of its warning cry to the barked warning of a small dog. The sound, according to him, may be imitated by the pronunciation of the syllable *chek, chok, chek!* in a slurred manner and in rapid succession: the breath, becoming the breath of the nose and the roof of the mouth. The assemblages of their burrows are denominated *Prairie-dog villages* by the hunters. They vary widely in extent: some are confined to a space of a few miles; others extend to a circumference of many miles, and are as large as towns. Many of these villages occurred between the Missouri and the Prairie towns; thence to the Platte they are much more numerous. He describes the entrance to the burrow as being surrounded by a number of the little mound of earth thrown up by the animal during its excavations. The excavation below, these mounds are sometimes inconspicuous, and generally somewhat elevated above the common surface; though rarely to the height of eighteen inches. Their face is that of a truncated cone, on a base of two or three feet, perforated by a comparatively large hole of entrance at the summit or in the side. The whole surface, continues Mr. Say, but more particularly the summit, is broken down and omelette, like a well-worn pathway. The sides descend vertically or to a gentle slope, and there, according to the various positions of the animal, it conveys down in an oblique direction. A single burrow may have many occupants. We have seen eight or seven individuals sitting upon one mound. The burrows occur usually at intervals of about twenty feet. They are used to sport about in the face of the plains in pleasant weather. At the approach of danger they retreat to their dens, or when its proximity is not too immediate, they remain barking and flourishing their tails on the further edge of the burrow, or sitting erect to recommence the fire upon in this situation they do not fail to escape, or if killed, instantly fall into their burrows, where they are beyond the reach of the hunter. As they pass the winter in a lethargic sleep, they lay up no provision of food for that season, and then they are not so large as when accurately closing up the entrance to the burrow. The further arrangements which the *Prairie dog* makes for its comfort and security are well worthy of attention. He constructs for himself a very neat globular cell with the...
dry grass, having an aperture at top large enough to admit
the finger, and so compactly formed that it might almost
be mistaken for a flower of the meadow.

Dr. Richardson observes that the Prairie dog seems to
differ from other American Marmots in the length of its
thumb-nail, and to approach in that respect A. Jules of
Lichtenstein.

WIT, a term which is applied to a faculty of the mind
and to the products of that faculty. As a faculty, it de-
notes not a distinct power, but certain specific modes of
using or operating upon the notions or images with which
the mind over the flimsy veil of the senses. The more
the more comprehensive faculty of imagination, with which
by early writers it was generally used as synonymous; they
sometimes used it in a sense still more general, as denot-
ing the intellectual faculty as distinguished from the will.
The precise boundaries of the term are still too un-
to admit of any strict definition. It may however be de-
scribed generally as consisting in the display of remote
resemblances between dissimilar objects, or such at least
as have no apparent resemblance. This species of wit is
exhibited in great perfection in two poems of a very oppo-
site class, the 'Hudibras' of Butler, and the 'Night
Thoughts' of Young; ludicrously by Butler, to display
the absurdities of 'hypocritical' pretence; seriously by
Young, to add force and point to his reasonings in favour
of his System of Ethics.

Other kinds of remote allusion, often without any actual
similitude, but suggestive to the mind, by indirect in-
ference, to make the comparison for itself, are considered
as wit, and produce a similar effect of surprise and plea-
sure.

When, instead of the remote resemblances discoverable
in things themselves, the different meanings of the same
word are brought into equivocal use, the operation is
called a pun. [Pun.]

WITCH-HAZEL. [WYCH-HAZEL.]

WITCHCRAFT. There is probably no age or country in
which there has not existed a belief in the possibility of
mortal beings acquiring the use of supernaturnal powers
for evil. Supposed to be a degree of that of a malevolent
desire, good or evil. In this, as in other species of super-
natural, there will be more or less resemblance in the
manifestations, wherever or whenever they are exempli-
ified, but that peculiar class of examples which comes
under the denomination of witchcraft admits of certain
lines of demarcation, which may be serviceable in keeping
the subject distinct from others. The proper field of this
superstition was among the Christian nations of Europe—
hence sorcery is more clearly defined than malevolence.
Maturity about the middle of the fifteenth century, and
flourished with tolerably equal vigour through Catholicism
and Protestantism, till it gradually decayed before the
progress of experimental science. In its doctrinal principles
it adhered to the idea of a connexion between the two
natures, being held to be a manifestation of the powers of
evil operating as antagonists to the authority of the Deity.
It was not necessarily used to accomplish evil ends, because
so many of the accusations of witchcraft relate to acts which
are condemned by no known moral code, but which became crimes from the means made use of. The
powers of evil thus employed by human beings had their
personal embodiment either in the Prince of Darkness in-
dividually, or in certain subordinate agents called imps or
sorcerers. In some cases the creature believed to be the party,
who, in one of their evil purposes to convey in remainder, for what was given to him according to their own desire. Besides the bargain in which the parties are
posed to covenant openly with each other, each party
usually presumed to have in view the secondary object
that every application of the doctrine of Covenant,
which recurrence have dealt largely in the horrors
resulting these mental efforts of imposition, where the one
striving to recover his chances of eternal salva-
tion is to be required to make concessions and promises
by the other to bridge the promised rewards, or to
return the donation of their enjoyment. In the most sin-

aspect the struggles of the evil one to cheat his victim are
exemplified in the ordinary Scotch superstition that he
transfers them money, which is then returned, and by
the sin of theft into slates or other rubbish; and the same instance is given
by way of example by Biensfeldius, a German author, who in
1591 published 'Tractatus de Confessionibus Malefi-
corum.' This author, who is one of the most systematic
of the numerous writers on this subject, declares that, instead
of venting the indignation of an excited and terrified
mind against the lost agents of infernal power, treats all
the horrors of sorcery with the gravity of an analytical
philosopher,—tells us that there are three elements nec-
essary to the accomplishment of witchcraft; thus:—shutting
permitting it; the power of the devil instigating and as-
sisting the operation; and man's corrupt will consenting
to be the instrument. It is a further general characteristic
of the superstition that the comment of the layman, or
the agents or victims have, in the majority of cases,
been females; and that in later times, when the charac-
ter of the superstition had degenerated both in the mag-
nitude of the objects accomplished and the rank of the
actors, witchcraft came to be considered a power exclu-
sively possessed by old women. It is probable that a pro-
cessingly to attribute the faculty of divination and the art
of perpetrating supernatural mischief to females may have
legitimately descended from the Pythia of the more early
periods of Roman history; and that the account of the witch
of Endor may have tended to strengthen the opinion. In
the superstitions however of nations which have had no
knowledge of acquiring power from the use of the
African Negroes, the North American Indians, and the Scan-
dinavians anterior to their adoption of Christianity—females
seem to have always been the prominent agents in the appli-
cation of the minor supernatural influences. In the prac-
tice of witchcraft within the limits assigned in this
article, it might be possible to find, in the nature of the
connection between the supernatural being and the earthly
agent, a tolerably sufficient reason why the influence of a
female must generally be greater in the infernal court
than of a male. It is observable in the records of the trials for witchcraft, or the books in which the subject is most minutely investigated, will observe how
necessarily it must follow that the power of evil being
endowed with the masculine gender, and committing its
sex to those spiritual emanations of his power which some-
times in his stead do his bidding upon earth, the mortal
recipients of his malignant influence must necessarily be of a
different sex. The institutional writers on the subject
seem to have considered the male of the species as not for
such purposes; consequently they lay it down as a general principle that women are
more liable to be the agents of Satan than men, a circum-
cance which Spranger, in his 'Maleus Maleficarum,' traces to what he calls their inferiority in mental strength,
and to their infirmity in moral character.

In going back to an earlier period than that which is
here assigned as the time when the superstition of witch-
craft was full grown, it will be found that the accusations
of nearly resembling the more modern offence of witch-
craft are of two distinct kinds—attempt to accomplish
mischief through the operation of poison or other natural
agents, and lapses from Christianity into heathen practices.
The Anglo-Saxon laws against sorcery or witchcraft are
simply levied against the practices connected with the
heathen worship from which the people had not been long
converted. The corresponding accusations in the south
of Europe are levelled against intercourse with demons who
represent Diana and her nymphs or Pan and his satyrs:
thus making visible the origin of the last described
act. In the south, however, we find the same personages
offering with changed names, and with natures adjusted to the religious opinions
of the age. The secrecy with which the Waldensians and
other early sects from the church, or group, endeavored to hold their opinions hidden away,
besides upon them charges of indulging in such unhallowed rites as were
traditionally considered the characteristics of ancient
heathenism. The horrors of the witchcraft superstition,
therefore, may be said to have had their birth among the
convertibles, and in the same charges are made against those
who frequented them in the thirteenth century which
we find made against witches in Sweden and Scotland in
the seventeenth. One remarkable practice of which the Wal-
densians accused will be recognized by every school-
boy who has heard a witch legend in the nursery—they were called 'scabbes,' because they rode to their meetings on a scab, or broom. The 'Narrative of the Proceedings against Dame Alice Ayscough, Prosecuted for Sorcery in 1324,' edited by Mr. Wright, for the Camden Society, and which is perhaps still more curious from the light it throws on the early conflicts between the ecclesiastical and the civil power, than in its reference to this subject, was published both as the classes of offences here alluded to. She was charged with having prepared noxious compounds, productive of debilitation which ended in death, and also with abjuring her belief in the holy church, with having deserted the mass and the eucharist, with having sacrificed in her own chamber, and with having attempted to undo the keys of the Church by imiously imitating the ceremony of excommunication.

During its earlier stages, the art of witchcraft was in far higher hands than those to which it afterwards descended, and was used for greater purposes. Witchcraft or sorcery was the means by which Joan of Arc was charged with having obtained her power as a warrior. The duchess of Gloucester was banished to the Isle of Man for sorcery against Henry VI. Richard III. made repeated accusations of the duchess of Berwick, that Bevis of Monmouth was under her fell influence against Jane Shore. The earliest witch trials in Scotland generally implicate persons of rank. Sometimes the women who are accused are young, and they do not always use their power for mischievous and malicious purposes. Bevis of Monmouth, who was tried in 1576, appears to have used her art for no other purpose than the cure of diseases and the performance of other benevolent acts, accomplishing them through the instrumentality, not of Satan or any of his emissaries, as was the case in the prosecutions of witches centuries later, but through the aid of an amiable old gentleman, who had the misfortune to be a prisoner among the fairies in Elftand. Alesoun Pearson, tried in 1588, had a long intercourse with Elftand, which appears to have commenced when she was not too old. She and many other persons among the fairies there, one of whom was her cousin William Symson, a doctor of medicine and 'one great scholar.' She was in the practice of appealing to her friends in fairyland for the means of curing earthly diseases, and Archbishop Abbott did not disdain to follow up the subscription which she obtained for him, his reliance on it being probably not weakened by his acquaintance with the virtues of the principal ingredients, which was claret.

These two trials so far exhibit the darker characteristics of the rural ceremonies, that Heinie the banisher from Elftand wished her to put her soul in his possession; and Alesoun Pearson was told that of the fairy host the tithe is taken every year to hell. The method in which the same occurrences are mentioned by writers of different times shows the progress of the authorities of witchcraft; and, as may be afterwards more particularly mentioned, both in England and Scotland the investigations of King James did much to explain and clear the misunderstandings of his day; to raise those who were so withered and so wild in their attire, that look not like the inhabitants o' the earth, and yet are o't. Perhaps the latest conspicuous occasion in which rank and beauty have been allied with charges of the nature of witchcraft, is that of Mrs. Wright and Mrs. Thomas, in the magnificent person of Sir Thomas Overbury and the practices against the earl of Essex; but the direct and palpable crimes exhibited in this horrible history throw the attempts at evil through supernatural influences into the shade. When in later ages it ceased to be encouraged by the great and the learned, witchcraft degenerated, till, in the end of the seventeenth and the beginning of the eighteenth centuries, it was entirely confined to such persons as Harriot so early as 1560 described a poor beaten crane, having her chin and her knees setting for age, walking like a bow leaning on a staff, hollow-eyed, un-
assassists who had not the means of ornamenting their writings with some of the wisdom of the antients. Jonson says he remembers some such figures having been dug up in a dunghill in his youth. The story of Bolingbroke and the witch of Eye, in Fabian's 'Chronicle,' illustrates this practice. In Middleton's 'Witch,' Hecate says, 'Is the heart of wax stuck full of magic needles?' King James, in his 'Dramatic Poems,' said that the life was a fiction of the operation of this charlatan; and after receiving so high a sanction, it of course cuts a conspicuous figure in the subsequent witch trials both of England and Scotland. In the latter country it became united with a belief in the uneartly origin of the operations, whom he describes as resembling the life which was familiar in the witchcraft^ the metamorphosis was made known by a charge being brought against the individual of having assaulted and wounded some women of rank in the neighbourhood, when he disclosed the fashion in which they had appeared, and the affair was hushed up. In the same work (p. 292) there is another instance, the same in its essential particulars, quoted from Bodinus. A belief in the metamorphoses of human beings into brutes is a superstition so widely exemplified in classical literature, and in the sculpture and paintings of all societies of men sufficiently civilized to provide such testimonies of their customs and belief, that it cannot be assigned as a special feature of the belief in witchcraft. The wildest however of the vagaries exhibited in the above, and discoverable in many like cases, seems to us to be the belief of the French in the metamorphosis to leave no other alternative but the belief, that the doctrines promulgated in one part of the world were in all their minute particulars adopted in another. This extension of, or the corruption of, the tales, was so prevalent a belief in France and Germany as to be the subject of separate treatises and of various judicial inquiries. It naturally did not extend to Britain. This superstition may be perhaps more distinctly traced to the influence of witchcraft than to any other single cause. As we are in this work chiefly concerned with this subject: by the Greek physicians it is understood to have been treated as a disease. Both the English and Scottish trials frequently illustrate the power supposed to be possessed by those in league with Satan of converting their victims into brutes, which they accordingly employ to convey them to the scenes of their unhallowed assemblies. This feat was performed on a large scale by the great army of witches charged with assembling at Bloomsbury in Sweden, in 1668, according to the narrative of Glanvil, in 'Sadoceismus destructus.'

A power over the elements is one of those gifts with which superstition will be most likely to invest its invisible agents. In its less striking form it has the aspect of a malign interference with the ordinary course of nature, by blasting some particular district, or transferring its elements of fruitfulness that they may increase the produce of some other tract in which the sorcerer is interested. This species of incantation is prohibited by the Twelve Tables (Dirksen, 'Uebersicht, &c. der Zaubertafel-Fragmente,' p. 539), and the illustrations of it in the witch trials are too numerous to be mentioned. A trading or maritime population living on a stormy coast will endow their malignant demons with a more awefull authority over the winds and waves. Olaus Magnus treats largely of the storm-raising powers of the Scandinavians. It was on his return from these regions with his wife Anne of Denmark, that King James produced so goodly an array of accusations against witches for aiming against his life; and among certain of the American witch trials of the seventeenth century, the aspect of superstition was prevalent, it is natural that the aspect assumed by the accusations should be an attempt to create a storm at sea for the purpose of intercepting his voyage. The accusations against witches of America, in 1638 and 1657, the method of which is printed by the Spalding Club, the exercise of a power over the elements is one of the charges. In the curious narrative as to Margaret Barkley and others, preserved by Sir Walter Scott in 'Demonsology' (p. 318), we find the same condition. The specific superstition does not seem to have taken root in England, and Shakspeare, whose witchery in 'Macbeth' is essentially Scottish in character, has given it a place there—

*Though you walk the winds and let them fight Against the charmed night; though the fury waves Confound and swallow navigation up.*

It is a remarkable circumstance that nowhere are the

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identities between the opinions promulgated in doctrinal works and the practice of witchcraft more fully developed than in the confessions of the witches as produced in official documents. The horrible tortures, which the alarm produced by the supposed existence of a coalition with Satan seems to have prompted men of ordinary humanity to sanction, appear to have generally called from the exhausted victims an assent to whatever narrative was dictated by the devil and the impudence of those acquainted with the best authorities on the subject, would know how to connect the received doctrines of sorcery with whatever train of real circumstances may have been brought home to the victim. Knowing in fact the capacity of man and the artlessness of women, they would easily fill up the supernatural details. Margaret Barclay, tried in 1618, was, according to the record preserved by Sir Walter Scott, subjected to 'gentle torture.' Sir Walter calls this 'a strange contradiction,' saying it is not without precedent, and we can imagine it taken from Bensfeldus, who tells us of a lady who, in 1590, at Cologne was subjected to 'moderata torture.' The Inquibus and the Succeedus—the former the visitant of males, the latter of females—are prominent in the confessions, and opened a new era of psychological inquiry. According to the book 'De Spectris,' Soc. ab Hr. aforesaid, it is given as a characteristic of the confession of a female: 'Ex eo tempore Deo et religiis renunciasset, et illam [Diabolum] sic concussisset secum, ut veritas in alio agenti, nisi peritingum erat quidquid esset notabile. These notabilities, and singularly enough the last and most particular one, are enlarged upon in several of the Scottish trials. Reference may be made to the appendix to Pitcairn's 'Crimes Trials,' p. 430, and to a pamphlet called 'The Confession of Walter of Renfrew.' Until the cairn's of the above-mentioned case, the trials of the witch of Scotland goes over the same subject, and further curious matter will be found in Glanville, 'Saducismus Triumphantus,' Spener, 'Malleus Maleficarum,' p. 297; and Deirio, 'Disquisitiones Magicae,' p. 74. There is no doubt that some of the confessions recorded were voluntarily made; and that, whether dictated by their own imagination or by their reading, the self-accusers did not speak on the suggestion of others. There are thus two mingled elements in the confessions, the suggestion of which is necessary to and would materially aid a philosophical examination of the causes which have produced such singular effects: the one would bring before us the physical and psychological causes from which the mind voluntarily imaged itself an actor in a supernatural occurrence; the other would explain the utterance of confessions of such acts by persons who until they were subjected to torture never imagined their existence. The confessions made under torture were frequently revolved during mental and physical excitation; and the circumstance reminds one of the recantation in the old French case of the trial of Father Girard, whose victim Catherine Cadiciere confessed that she was the agent of a conspiracy against him; and of the recantation in the later case of the dam Madame Limet, who, in a state of excitation, as she maintained, of the recent occurrence of an atrocious murder, and of a harassing cross-examination in relation to it, confessed to having witnessed it under circumstances which blackened her previously-unblemished character, an admission which she afterwards revoked.

The influence on society of a belief in witchcraft was of the most pernicious kind. It gave an unchecked flow to all the malignant passions; some venting them in accusations to the witchcraft, others taking them in the death of their fellow citizens. In the year 1515 five hundred people are said to have been executed at Geneva on charges of witchcraft; and Remigius, the inquisitor, boasts that he put nine hundred to death in Lorraine. The first person who lifted his voice against these execrations was John Pits in 1568. He and his followers carried on a controversy with Delrio, Bodinus, Schranius, and others, in which it is generally admitted that the defenders of witchcraft were the more successful logicians. The supporters of the practice had the compact and complete system of sophistry, and he who would break through it must, like a Bacon or a Locke, possess strength enough to destroy the whole fabric. Wierus and his followers ventured to raise their voice against the conviction only of taking manifestation of the power of diabolical possession, not its existence. Against the brutal practice of burning a witch to see if she will sink or float, which may be traced as an ordeal succeeding that of the red-hot ploughshares, and which inferred that a body in which an evil spirit dwells is lighter than water, they could do no more than adduce the experimental fact that the herd of swine into which Jesus cast out the spirit, running into a lake, were drowned. Of all the opponents of this superstition the English Reginald Scot, who wrote in 1584, was perhaps the most successful in the employment of an acquaintance with natural operations, and the story of this spirit, found in a remarkable place, was the ready sarcasm. He was followed by Hasretel in 1598, and in 1729 by Francis Hutchinson, who however appeared chiefly to the unlearned, among whom alone the best understood the present superstition.

The learned men of Europe generally believed in witchcraft down to the end of the seventeenth century. Selden has an apology for the law against witches which shows a lurking belief. He says that if he believed there was a witch, it was not by force, but by the power of the law, that he could take away a man's life; 'this was a just law made by the state, that whoever should tell half thrice and cry "bus," with an intention to take a man's life, shall be put to death.' The logic of Selden if, unainted by knowledge of the witchcraft and superstition that in a work called 'The Institutes of the Law of Scotland,' published at Edinburgh in 1730, by William Fawter, an author deservedly neglected by practical lawyers, who, in a specific definition of the nature of witchcraft, then as now, stated the following: 'Witchcraft is a practice which, if there may be, and have been witches, and that perhaps such are now actually existing; which I intend, God willing, to clear in a larger work concerning the canon law. This promised work never made its appearance.'

WITCHCRAFT, or literally an assembly or gathering of people, from the Anglo-Saxon 'gemono,' an 'assembly,' and 'to know,' which has the same root, 'wit' or 'wise,' the words wit, witness, wise, and the legal phrase is to 'wit.'

Although the chief rulers of the Anglo-Saxon state nearly down to the time of the Conquest, bore the title of king, and in their charters and letters attached to it most of the honours and emoluments belonging to it, it never was a hereditary one to a person of the royal blood, but in the Barbarous nations, kings indulged, yet these little regarded in power over lesser chiefs of that nation, who either had themselves shared together with their own particular followers, or were descended from ancestors who had so shared the risk of the first invasion which seated the tribe in Britain. To election by the chief of the king, the legal term was first used;' and if the sceptre descended to his race, it was, if not by force of renewed election, certainly by means of the formal recognition of the new king by the nobles in an assembly convened for that purpose. If of the archbishops, bishops, and abbots, the judges (if such there were), and the largest landholders formed part. It was not upon the death of the last instance, that five hues of land were found to be an indispensable qualification. Whether the right of election was not a doubt; judging by the analogy of the silence notes, and of all the political and judicial institutions of our Anglo-Saxon ancestors, it is probable that each district appointed a chief, who assembled and received the person (if an active part in their deliberations) by means of his responsible officers, his twelve, and of the persons who did serve for it at the county court: there is however, we believe, evidence that there was a systematic representation of the people by enos, or men by persons elected for that specific purpose.

Nor did the functions of these national councils cease with the election of a king: their meetings, if not peculiar...
cal, were frequent, and were held usually at the great festivals of the year, Whitminiade, Christmas, and especially Easter; they formed the highest court of judicature in the kingdom; they were summoned by the king in the case of any political emergency; their concurrence is always mentioned in the (trials) of roads and bridges, (acts) of war and peace, necessary to their validity, as well probably as to that of royal grants and charters; and the chief persons who attended them frequently expressed their approbation of such royal acts by their signatures under that of the king. The function was to be filled in the dominions of one king, whether as breveta (whatever office that name implied), or by the union of smaller states into one kingdom, the national council retained its powers. It was called by the king, in his grants and laws, his witan, his wenage, his myrce, synod, archbishop, great latter, his eadgān (worthy); and in Latin by similar names, e.g. magnum concilium saponem, universae gentis Anglici consilium; or by names indicating the rank and property of the members, such as those of the members resisting the prelates, the chief barons, the council of the kingdom, the council of the county, the council of the shire, and the council of the hundred. The composition of this council must be gathered from the words in which its members are mentioned, and (as we have said) from its analogy to other smaller political assemblies.

Mr. Sharon Turner enumerates, from various extant charters, the designations given by the king to his great council in the preambles of those instruments, or added by the members themselves to their signatures; and says, in the words of the Progress, in the English Commonwealth, more fully sets forth the office of the proceedings of the great council (Proofs and Ills. p. cxxviii.). After the signatures, or more frequently crosses, are found the titles of Bishop, abbot, deacon, priest, prince, duke, comes, earl, baron, viscount, miles; and of the great household officers of the palace, pincerna, disc thegn, chief carver, &c. The names especially of ecclesiastics often have some verb after them, which is fantastically varied, as saulfi, comprovbavi, favi, losadavi, confirmavi, subscripti, to which the petty kings added, a great variety of subjects, less used, which self frequently adopted in his signature the form Confessio et signo crucis munis. To some charters the names or crosses of princesses of the royal family and of abbesses appear. In one case the title electus follows a name. One story belongs to the reign of Ethelwulf (825) relates to the church a tenth, with the assent of the kings, thanes, barons, and people. The eighth law of Edward the Confessor names the people; and the 32th law recites that it was composed by the common advice and assent of all bishops, priests, monks, nobles, and people; for it is the rule of the wise and elders, and of the people (populorum) of the whole kingdom. Sergt. Rulehead, in his preface to the Statutes, conjectures, at the same time his ignorance, that the scribe resembled our House of Commons, the electus of the House of Commons were members of the privy council. Undoubtedly some of the functions which in far more recent times the privy council has performed did devolve upon the witan; for instance, their approval was required for certain acts of the king; and generally their assent was deemed necessary to the validity of such acts, and was considered and to sanction those which were submitted to them.

In concursing in royal charters and grants the witenagemote performed the double office of consenting to and of promulgating royal acts, which was analogous to that of the shire-mote, which in those rude days distributed justice rather according to the notoriety of the facts than to any systematic rules of investigating the truth, and quelling itself the interest and loathed that the main transactions touching the rights and property of individuals within its district should pass in its presence.

In those cases where the administration of justice was intrusted to the witan, a jury of the whole district or of any particular portion of it, was appointed, which was analogous to that of the shire-mote, which in those rude days distributed justice rather according to the notoriety of the facts than to any systematic rules of investigating the truth, and quelling itself the interest and loathed that the main transactions touching the rights and property of individuals within its district should pass in its presence.

During the Anglo-Saxon times the possessions of the king, and the ordinary payments made to the crown by every landholder, together with the duties paid by townships, were sufficient for the ordinary wants of the government, especially as the triple duty (tribus necessitas) of repair, law, and bridge, maintaining the walls of the burgs (burh-bote), and resisting invasion (the fyrd), was invariable. The king too was entitled to tolls on goods sold in most markets and fairs, and to customs on imported goods; but in those emergencies when a pecuniary contribution by the man of the nation, the witan were called on to accede to the tax. If the domestic affairs of the nation were thus considered and confirmed by the witan, treaties with foreign states were equally submitted to their approval. Thus the treaty between Alfred and Guthrum the Danish leader, whereby the eastern counties were abandoned to the Danes, is made with the approbation of the witan.

The duties of the witenagemote were therefore partly legislative, partly, and indeed for the most part, judicial. In order what a political act was to be promulgated, or his own state, the court where the king's laws and his most important acts were promulgated, his rights ultimately enforced, and justice administered if denied elsewhere: and in enumerating the offices one is necessarily led to observe the analogy which subsists between that ancient aristocratic assembly and the House of Lords of recent times.

When the Norman Conquest had destroyed all the rights of the English people, alienated from their minds the memory of their institutions; and the king, as the emergency arose, availed himself of those institutions to strengthen his title or assist his projects; and on the other hand the Norman nobles found in them the means of uniting to themselves the good of the people, in order to check the oppression or to limit the power of the crown. The circumstances of the Norman invasion, and the fact that the nobles who accompanied William in that enterprise were rather fellow-adventurers than subjects, led him to establish himself and his successors of a general council of his chiefs, sometimes expressly to consult upon state affairs, often only for the avowed purpose of celebrating with him, and at his cost, the great religious festivals of the year. There to 'Conquête d'Angleterre,' took place, and is marked on the 'Chronique de Normandie,' that before William undertook the expedition to England, his immediate counsellors, whose concurrence he had obtained, warned him 'that he must also ask aid and counsel of the people generally,' that he who commanded the English nation was to be supreme himself, and that the duke then convened the principal chiefs, ecclesiastics, and merchants. Sir F. Palgrave observes, that the great council of William the Conqueror differed little from the witenagemote, and that the Saxons and Normans maintained it the same, and that all the races in the kingdom (at least those in Normandy) were mingled in it, and that the Conqueror gave it the form of a national council by the ancient name of witenagemote.

By degrees the English recovered some political rights; their Norman rulers yielded, at least in words, to their subjects and for the respect of their ancient institutions. The people called them, the laws of Edward the Confessor: the machinery already established of townships, hundreds, and shires, with their moots (assizes) and officers was maintained, as useful for the collection of the crown taxes as for the maintenance of law, order, and the protection of the life and property of individuals. Hence, although the ancient popular officer, the reeve, was displaced for the Norman count, viscount, and bailiff, who derived their authority immediately from the king, they had the name of shire-mote, and the habit of representation at that assembly of the burgs and hundreds in the county remained.

The power of the aristocratic element (unquestionably the main ingredient) in the witenagemote was therefore
never suspended, although in its conflicts with the crown it might be greater or less. Its influence was most effi-
ciently shown when, in 1215, the nobles wrested Magna
Charta from King John. The popular element in the wide-
nomenclature assumed a distinct form when, in the succeeding
reign (1265) Simon de Montfort, earl of Leicester, high-
Steward of the realm, issued in the king's name a writ to the
sheriffs of all counties, commanding them to return to
the parliament two knights for the county, and two burg-
ese of the borough, to consider concerning the affairs of
the nation. [PARLIAMENT.]

(Turner's History of the Anglo-Saxons; Sir F. Palgrave's Rise and Progress of the English Commonwealth.)

WITHAM. [Essex.]

WITHAMITE occurs crystallized. Primary form an
oblique rhombic prism; it is found also in small imbedded
globular masses composed of radiating crystals. Fracture
uneven, sometimes crude, sometimes glassy. Colour, red
and reddish-white. Streak white. Translucent; opaque.
Specific gravity 3-137.

It is not acted on by acids. Before the blowpipe intu-
mesces and fuses with difficulty into a dark-grey scoria.

With salt of phosphorus it dissolves with effervescence
into a globule which contains a little silice, and
becomes opaque on cooling.

Found at Glencoe in Scotland, and is regarded as a
variety of epidote. Coverdale's analysis performed on
only six grains—

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WITHER, or WYTHPER sometimes improperly (Wither), GEORGE, was born 11th June, 1688, at Bentworth, near Alton in Hampshire, and was the son of George Wither of Bentworth, who was himself the second son (the first by a second wife) of John Wither, Esq. of Many-
downe, near Wotton-St.-Lawrence, in that county. The
name of Wither's mother was Anne Serle. After receiving the
usual instruction at the grammar-school of Colemore, or Colemore, under its eminent master, John Graevs, he
was sent about 1604 to Magdalen College, Oxford, where
he had for his tutor Dr. John Warner, afterwards bishop of
Rochester. After remaining however about three years,
during which time, according to his surviving biographer,
Anthony Wood, he 'made some proficiency, with much ado,
in academical learning,' he was called home without having
taken a degree, as he himself tells us (in his 'Memoir'
'written for the plaugh.' Wood only says that 'his gentry
being addicted to things more trivial' than the studies pursued at the university, he 'went to London, and entered himself first at one of the inns of
Chancery, afterwards at Lincoln's Inn.' But, 'continues
Wood,' he 'regarded in his youth things more smooth
and delightful, he did at length make himself known to
the world (after he had taken several rambles therein)
by certain specimens of poetry; which being dispersed in
several hands, [he] became shortly after a public author,
and much admired by some in that age for his quick ad-
vancement in that faculty.' Some pieces of less preten-
sion had already made his name known in a limited circle,
when in 1613 he published his volume of poetical satires
on the manners of the time, entitled 'Abuses Stript and
Washed.' This was the first thing in which he showed
goal to the government he was committed (it is not
stated by what authority) to the Marshalsea prison, and lay
there for several months. While in confinement he wrote
and published his 'Satire to the King,' 1614, in which he
complains of the indignities he had suffered during his
detention, and which is supposed to have procured his release. The
spirit of his poetry and the usage he had met with now
made him a great favourite with the puritanical party, by
which Wither was sometimes insinuated to have been
"crispe run for his general fuse pouring-forth of English rhyme." Afterwards, it is added, 'the vulgar sort of people' came to regard his
poetry as having in it something prophetic. He de-
nounced the abuses of the times, too, in various prose para-
ses as well as in his more frequent discharges of
flowing verse. All this while he appears to have lived in
easy circumstances on the landed property which he had
inherited. But, as might have been expected in so hot and
restless a spirit, Wither, as soon as the storm of the civil
war began to blow, hastened to throw himself into the
arms of that element of which his name was so well
known, without much minding which side or what prin-
ciples he fought for. He served as a captain of horse, and
was quarter-master-general of his regiment, in the expedi-
tion which Charles I. led against the Scotch Covenanters in
the spring of 1644. (Also, it was during this time that
he engaged in writing the 'Lamentations of the
Earl of Looe.' Years after, when the war began between the
kings and his English subject, Wither sold his estate and raised a troop of horse for
the Parliament, in whose army he was speedily promoted to
the rank of colonel. On his death-bed, in the year
1647, he is said to have uttered the motto, 'Pro Rege, Lege, Græge.' Being taken
prisoner by the royalists, he is said to have been indebted
for his life to a bon-mot of Sir John Denham.—Denham
memorial tablet in Westminster Abbey. In Wither's
works, after having got into his clutches, 'denial is not
made to hang him, because, so long as Wither lived, Sir
Denham, would not be accounted the worst poet in Eng-
lis.' He also probably soon recovered his liberty. Not
long after this, Wither, on the contrary, in the
Long Parliament a justice of peace in quorum for Hamp-
shire, Surrey, and Essex, which office he kept six
times, and afterwards was made by Oliver major-general of
all the horse and foot in the county of Surrey, in which em-
ployment he was so addicted to ticking his fingers that
he was said to have a great odium from the generous
royalists.' A MS note on a copy of one of his tracts in the British Museum, is
'Boni Ominis Votum,' printed in 1656, describes him as
lately made master of the statute office.

At the restoration Wither was only forced to
dezarte this spoil, but was by a vote of the Convention
Parliament sent to Newgate on the charge of being
the author of a publication entitled: 'Vox Vulgi,' which
was regarded as a scandalous and seditious libel. There
is a extract at large from this pamphlet, which is
entitled 'The Prisoner's Plea humbly offered in a Remo-
strate, with a Petition annexed, to the Commons in
parliament assembled, by G. Wither, falsely charged to
have composed a libel against the said Commons, and
therefore now a prisoner in Newgate.' Wood asserts that
he afterwards confessed himself the author of the
obnoxious publication, upon which he was convicted
of high treason, to the Tower, with orders that he should
be hanged, drawn and quartered. It is said that he
used the good use of pen on his situation, and at
some time an impeachment was ordered to be drawn up
against him. The impeachment does not appear to have
been proceeded with; and he even contrived, by the device of
the keeper, to write and to send to the press from time to
time circulars containing very valuable information. It
appears that he was a grandson of Wither's, Hunt Wither, of Fidding, in the
county of Southampton, designating himself colonel of
foot in her majesty's army, and brigadier-general in
the service of Charles III. of Spain, was alive in 1667, and that the
place to which he had been committed had been
transferred to the possession of an heir female, and was a few years ago
held by Mr. Bigg Wither, who in consequence had taken the
old family name. (See 'Memoir of Wither' in Bibliographi-
ca, vol. i. pp. 1-18, published in 1819.) Anthony
Wood, in hisdetach from his account of Wither with the critical remark that 'the things that he
had written and published are very many, accounted
for the multitude of scholars mere scribblers.' These works fill a number of volumes, the best edition of
the 'Fasti Oxonienses.' But the most detailed catalogue
of them is that contributed to the 'British Bibliographer'
by the late Mr. Thomas Park; it includes 112 articles (among
which however are some not known to have been
published and extant) under vol. i. pp. 173-300, and
110, and vol. ii. pp. 17-32, 379-391. Various bibliogra-
phical
Obsequies. A Satire to the King, Epithalamium, or Nuptial Poems, The Shepherd's Hunting, His Motto, and Hymns and Songs of the Church, &c., Svo., London, 1622. This reprint is without date, but was executed about 1820, by Gutch at Bristol, under the superintendence of the late Dr. Nets. It appears to have been intended as the commencement of a complete edition of Wither's poetry; but it was carried no further than the two first volumes, and the greater part of the impression was sold for want of paper.

The first edition, 1st and 2nd, fill the first volume, making 457 pp. 9. Another reprint of Selections, in 2 vols. Svo., also without date, and without any general title-page: vol. 1. contains * Fair Virtue, the Mistress of Philaretus,* 215 pp.; and *Selections from Abuses and Whipt,* the latter of the volume on p. 347, vol. ii. contains the first five cantos in full of 'Britain's Remembrancer,' and the metrical summaries of the 6th, 7th, and 8th; selections from a 'Collection of Emblems, Ancient and Modern,' London, 1694; and *Selections from Halmah, or Britain's Secretary.*

Wither's poetry is of very unequal excellence, and a good deal of it is worthless enough. His fatal facility, which grew upon him as he advanced in life, and soon debased his style from freedom to slovenliness, has left nearly all his work a mass of negligence or want of sense, or other. But there was in him a true poetical genius, a quick and teeming invention, a universal sympathy, a fancy that could gild any subject, or ' make a sunshine,' like Spenser's Ura. 'in the saddest place,' above all, a natural love of truth, and a contemptuous scorn of what may be sometimes wanting, has put a life and enduring freshness into all that he has written. His earliest style is his happiest; in that he seems to have sought by art and pains for the directness and transparency for which he afterwards turned to negligence or chance; but he also took, apparently from design, to a greater harshness both of phraseology and rhythm; but, both in his verse and in his prose, his English is rarely without the touch of great ease and clearness, as well as idiomatic vigour.

WITHERING, WILLIAM, was born in 1741, at Wellington in Shropshire, where his father was a surgeon-apothecary in considerable practice. He received his early education at a school kept by the vicar of his native village, and then commended his medical education under his father's instruction. After spending the usual preliminary time with his father, he was sent to complete his medical education at Edinburgh, in the university of which place he took his degree of Doctor of Medicine in 1766. He then proceeded to the practice of his profession at Stafford, where he married; but not succeeding, he removed to Birmingham in 1774. Here he became the successor to Dr. Small, and quickly succeeded in obtaining a large and lucrative practice. His income is said to have been between 2000l. and 3000l. per annum, and he had a large and profitable private practice in London. In the midst however of his great professional avocations he found time to cultivate with great ardour the sciences connected with natural history. He was exceedingly attached to botany, and having become acquainted with the botanical pursuits growing in Great Britain, he was induced to publish, in 1776, a work on the plants of this island. It appeared first at Birmingham, in 2 vols. Svo., and was entitled 'A botanical Arrangement of all the Vegetables naturally growing in Great Britain.' As it was the first, and first it was little more than a translation of the descriptions of the British genera and species from the great work of Linnaeus, with the addition of many of the habitats of the plants from Ray's works, and was therefore quickly and found a sale. A second edition was published in 1793, and a third in 1796. In this edition the work was increased in size to four volumes, and a vast amount of original matter added, so as to give it quite a different aspect to the reader from the first edition, in which he was much assisted by many of his botanical friends, and he has everywhere acknowledged how much he was indebted to Dr. Stokes and Meares, Woodward, Valley, Stackhouse, and others. Since the death of Dr. Withering several editions of his ' Arrangement of British Plants' have been published. It is now however entirely superseded by the more valuable manuals of Smith, Hooker, Lindley, and Babington. It had the merit of being the first British Flora arranged according to the Linnaean system; and the early editions may now be consulted with advantage on
the properties and uses of the plants native to Great Britain, and the traditions about them.

Botany was not Withering's only scientific pursuit; he was fond of chemistry and mineralogy. He published, in 1735, a translation of Bergmann's Microscopica Regni Mineralis, with the title 'Outlines of Mineralogy.' He was a fellow of the Royal Society, and published several papers on mineralogy and chemistry in the Philosophical Transactions, of which the following are the titles:—In the volume of 1737-8, 'Experiments on the different kinds of Marie found in Staffordshire;' in 1782, 'Analysis of the Toadstone of Derbyshire;' in 1784, 'Experiments on the Terra Ponderosa,' in 1788, 'An Analysis of a Hot Mineral-Spring in Portugal.' These papers display a very complete knowledge of the chemistry of the time. But while pursuing science he did not neglect his profession, and he published several papers on medical topics. In 1778 he published 'An Account of Scarlet Fever and Sore Throat, especially as it appeared at Birmingham in the year 1777, 8,' and in 1793, 'A New Account of the Foxglove and some of its medical uses; with practical remarks on the Dropsey and other diseases.'

Although he was not the first to recommend foxglove (digitalis) as a medicine, he must still be looked upon as the first physician who knew how to use it, and by his writings gave it the character as a powerful medicinal agent, which it has since ceased to retain.

Dr. Withering was always the subject of a weak state of health, and was frequently attacked with inflammation of the lungs. He had no much willed to induce him to try a change of air for the benefit of his health, and he accordingly spent the winter of that year in Lisbon. At the latter end of the year 1734 he again went to Lisbon, and returned the following year. His health was greatly improved by this change, and he re-established himself at Edgbaston. Hall to a place called the Larches, previously the residence of Dr. Priestley. Here in retirement he spent the remainder of his days, and died in November, 1793.

Withering was a man of considerable discernment and great perseverance. He was humane towards the poor, and mild and courteous in his manners. He was conscientious in the practice of his profession, and never prescribed what he knew to be false. He never considered that he had any right to make use of the properties of plants which did not belong to him. Although reserved in public, he was exceedingly open amongst those who knew him; and he left behind him a large circle of friends. (Gentleman's Magazine, vol. liii.)

Witheringia, an extensive genus of plants belonging to the natural order Solanaceae, named in honour of Dr. William Withering. It has the following characters:—calyx 4-5-cleft, uncrenately campanulate; corolla rotate; tube short, limb 4-5-cleft; stamens 4 or 5, with connivent anthers; ovary elongated, style long, stigmas subulate, berry 2-celled, supported by the permanent calyx, many-seeded; the placenta adnate. The species of this genus are trees, shrubs, or herbs, with a soft wood, having a large pith, and the habit of the plants belonging to the genus Solanum. They are found in the Andes, and are all inhabitants of South America. About twenty species have been described. They are not handsome plants, so that they have not been introduced into gardens and hothouses. Their properties are not known, and similar to those of the family to which they belong. The first species of this genus, which was described by M. L'Heritier, is the W. Solanaceae. It has an herbaceous stem, and a root composed of fusiform tubers; the leaves are oval-oblong or obovate, or lanceolate, rather plicate; and the umbels are axillary, sessile, and longer than the petioles. It is a native of South America, and has very much the appearance of a Solanum. W. stramonifolia, a native of Mexico, is a tree, and attains a height of 10 or 20 feet. W. rhomboides is found on the Andes at a great height, and is a climbing shrub. In their cultivation the species of Witheringia require the same treatment as Solanum.

Withered, [Brit.], Wittebrechts, Wittebrechts, Wittof, Johann Philipp Lorenz, a German physiologist who distinguished himself as a writer of didactic poetry, was the son of Johann Hildebrand Witsch, professor of history, eloquence, and Greek literature, and was born at Duisburg on the Rhine, June 1st, 1725. In 1740 he entered the university of his native place, where, for the first three years, he warped himself to classical literature, history, and antiquities, and afterwards to medicine. His father then sent him to Utrecht and Leyden, on returning from which seats of study he obtained his medical degree in 1756, and practised first for several years. As the same time he was made corresponding member of the Göttingen Scientific Society, and also of the Royal Society. He continued at Ham and until received an offer from the university of his native place, in 1770, and living there in the midst of the German and Greek literature, which he held at the time of his death, July 3, 1789.

Though most of his poems had been composed before, but being, in fact, the productions of his youth, he did not allow himself to be thus and actively engaged in medical practice till 1782 that he gave them to the public, in two volumes, under the title of—'Academische Gedichte,' one, as Exeter observes, not particularly well chosen, since it does not convey any idea of his ability, but would have been of great service for his medical purposes. Witsch was a person of very considerable public spirit, since it is the philosophical sage, the man of thought, and extensive learning which is best suited for academic purposes. The Academy was well suited to the poetical spirit, but in the same degree to have affected rather than to have endeavoured to do. Still those who can overlook imperfections of that kind, and who have any wish to attain any, will not perhaps be thus and to some damage, but are capable of regrettable, and will be repaid by his 'Die Moralischen Ketzer,' and 'Sinnliche Erzählungen,' for the studious person which they require.
the first year of his reign, 772. His first campaign was successful. He penetrated into the country of the Engerns, took their fortress of Erkuburg (now Stadtburg, on the Dünewell) by surprise, and destroyed the town of the same name, a national monument. Great wealth was found there by the Franks. In the neighbourhood of this monument Charlemagne made a truce with the Saxons, and returned to his dominions in order to prepare his expedition against Desdivendis and the parochial churls. The battle of Grunburg, Charlemagne in Italy the Saxons prepared for a fresh war, and chose two commanders-in-chief, Witikind and Albion.

Witikind had extensive estates in Engern and Westphalia, and it appears that he was 'duke' of the warriors of these two provinces; and among his followers were Witikind and North Albingians. Witikind immediately invaded the Frankish territory; but in 775 Charles approached with a mighty host, and penetrated as far as the Oker, in the heart of the duky of Bremen. After several defeats the Eastfrisians and the Engern, whose duke was then Bruno, made peace and gave hostages to Charles. Bruno and Hessi were probably subordinate dukes. The Westphalians followed their example at Bocholt, where Charles made new progress, and built castles, in which he placed garrisons. In 777 he held a meeting at Peraden, which was attended by a great number of Saxons nobles and commons. Charles renewed the direction to which the Saxons were to pay tribute. Witikind however did not appear, but fled to Siegfried, king of Denmark, whose sister Gera he had married. Charles, believing that Saxony would keep quiet, turned his armies towards the Arabs in Spain; but no sooner was Bocholt abandoned than the Saxons under Frankish knights, renewed the war, and when the Saxons heard that a Frankish army had been destroyed by the Basques in the valley of Roncevalles, the whole country took up arms, and Witikind ravaged the Frankish territory as far as Cologne and Remagen. In Charlemagne's absence of Charles, against whom he secretly excelled the Sciri, a Slavonian nation on the right bank of the Elbe. Suddenly he crossed the Elbe and destroyed a Frankish army at Santnolnburg, that Witikind, intrusted, appeared with fresh troops, and having succeeded a portion of the Saxons to give up their principal leaders with their adherents, he ordered them all to be beheaded near Verden, in the Aller, 4500 in number (783). This victory was as great as that on the Saxons.

A bloody but inoffensive battle was fought near the place where Varus perished with three Roman legions, in the Reutuburg Wald; nor could Charles boast of having defeated his enemy in a second engagement which was occasioned by the source of the Hedebrun.

The places where Charles and Witikind had ranged their armies, two sand-plains, at a short distance from each, near Werdin, in a barren desolate country, are called to the present day, the one the Kersfeld, the other the Wittefeld. During the following year, Charles continued an obstinate struggle with the Saxons; and seeing the impossibility of subduing them unless he gained their chiefs, he sent messengers to Witikind and Albion, who remained in their possessions, more willing to enjoy the enjoyment of all their estates if they would adopt the Christian religion and recognize Charles as their master. Upon his proposition they both sacrificed the interest of their country to their own. They went to Attinicum, now bittern in Lorraine, where Charles, or his brother Hincmar, was invested, submitted to the Frankish king, and were baptized; thereupon they returned to their dominions (A.D. 785).

The final subjugation of the Saxons, which was not completely effected till the year 803, and the conditions of the peace, have been given in the history of the Teutonic nations. A proof of Witikind's attachment to the Christian religion is his foundation of the convent, afterwards chapter of St. Alexander, at Wildeshausen, in the grand-duchy of Hessenburg. In the respective documents (though in some of them only Witikind's name is inserted), submitted, there are some ruins, situated on a hill surrounded by the Rhine, which are said to be the remains of the chief residence of Witikind; and in the mountains near Dissen, east of Osnabruck, there is a ruined stronghold called Witikinds-Burg. It is said, but it cannot be proved, that Witikind was the first Duke of Osnabruck, a dukedom, in a battle with Geraldo, duke of Saxony. His body was interred at Paderborn, whence it was carried to Engern, and subsequently to Herford, near Minden. In 1377 the emperor Charles IV. ordered a monument to be erected to his memory in the cathedral of the chief Saxony. The stones which were carried from Herford to Engern, and deposited under that monument. (Conversations Lexic.) There is little doubt that a considerable portion of Witikind's hereditary estates were situated in the present duky of Olden.) Charles, the German princes who claim a descent from the Saxon chief, the house of Holstein-Oldenburg seems to have the best historical title.

(Eginhardus, Vita Caroli Magni, ed. Schminck, with the notes of Bessel, Bolland, and Goldast; Poeta Saxo (Anonymus) in Lebenh. Scriptores Rer. Brunen. ; Missor, Osnabruckische Geschichte, vol. i., the best work on the subject.)

WITNESS, from the Saxon witan, 'to know.' In the annals the witan is called in the record and testimony and of the competency of witnesses are so fully discussed as to render needless any further notice of them, if a recent Act, 6 and 7 Victoria, c. 83 (1843), had not made some important alterations in the law. These alterations are in the second part of the Act, regarding the courts of law in the courts have of late years inclined; they remove from the judicial inquiry after truth many of the obstructions arising from incapacity created by the law, and enable the tribunal to obtain all possible information, laying down the act. The witness and the witnesses adduced, and on the truth of their testimony.

This statute enacts that every one, excepting a party named in the record or the wife of such party, shall be competent to give his testimony in any legal proceeding, competent to give his testimony in any legal proceeding. This general rule is subject to the condition that he may have an interest direct or indirect in the matter at issue; and that no one shall be rendered incompetent to be a witness because he has been previously convicted of some crime. The act further enforces a party to a suit in an action to examine a defendant in the suit notwithstanding his interest.

The only exceptions made by the act are in the case of wills, which a party beneficially interested under them is still incompetent to prove, and in the case of actions of ejectment and of replevin. In the first of these actions, the interest of the plaintiff or tenant of the premises in question, and in actions of replevin the landlord of the defendant may be the real party to the action, though his name does not appear in the record. Therefore all the parties above are competent, and of these parties and of their wives is excluded.

WITNEY. [Oxfordshire.]

WITT, DE, JOHN and CORNELIUS, two of the ablest and most honourable of Dutch statesmen, were so inseparable in their career that the histories of the two are inseparable. Cornelius was one of those rare and invaluable natures who intuitively feel themselves born to perform a secondary part, and are probably, in the persevering unostentatious discharge of duties, more useful than even leaders of commanding talent. There is something extremely beautiful in the uninterrupted co-operation of two men like Cornelius and John de Witt, each among the very finest specimens of his own class of characters, and yet in the tie of brotherhood strengthens the bands of friendship.

The father of John and Cornelius was a leader in the party opposed to the assumptions of the House of Orange, and a member of the States General of Holland and West Friesland. He was of the line of the Orange family, a house of sufficient consequence to be included among the eight citizens imprisoned in the castle of Lüwenstein, in 1650. The young De Witts therefore were early imbued with hostility to the pretensions of the family of Orange, and devotion to the Republic; and at the same time encouraged by the position of their father, and was appointed as the leader of the party that should look forward to the immediate employment.
John de Witt was born at Dordrecht in 1625, and educated at Leyden, where, in addition to the studies necessary for one who aspired to rise in the state, he is understood to have cultivated the mathematical sciences with success. A treatise published at Leyden, in 1650, under the title "Elementa Linearum Curvarum," is attributed to him.

The death of William II, prince of Orange, on the 2nd of October, 1650, threw the management of affairs into the hands of the party to which De Witt's father belonged. Constitutional, honest men, having seen his talent, in the more particular notice of his career in the sequel of this article, appointed burgomaster of Dordrecht, the family influence obtained for John the office of pensionary of that city. The ability which he displayed in that charge procured for him, two years later (in 1652), when only in his 27th year, the more important appointment of grand pensionary of Holland, which he retained till 1672. During the intervening twenty years, he was, under the modest title of grand pensionary, virtual chief-magistrate of the republic. The period was critical one for Holland—during the earlier part of it De Witt was called upon to make head against Cromwell, and during the latter against Louis XIV., and he struggled at the same time against the inveracity of domestic faction.

De Witt, assuming the reigns government found the republic engaged in a war with England. A series of sea-engagements in which, although great skill and bravery were displayed by the Dutch and English commanders, and much victory, victory alternately had on each side without declaring very decidedly for either, paved the way for a peace which was negotiated by De Witt, and signed at Westminster on the 19th of April, 1654. On the part of the Dutch the honours claimed by the English for the victory in the Channel were conceded. A secret article was appended to the treaty, in which it was stipulated that the Stuart family should receive no support from the United States, and that no prince of the House of Orange, so nearly allied to the Stuarts, should be elected stadtholder of the Lower Provinces. The secret treaty was signed by the representative of Holland alone; the other provinces were as jealous of the ascendency of Holland as the republican party of the ambition of the House of Orange. This treaty embraced the great outlines of the policy in which De Witt persevered throughout the whole of his future administration:—Avoiding giving umbrage to the States of Europe by sticking on points of empty etiquette; aiming to preserve peace and the security of its foreign possessions for Holland; balancing the different European powers against each other; and guaranteeing Holland's independence in the House of Orange.

Towards the attainment of the last-mentioned object De Witt laboured indefatigably. The republican party persevered in Holland, but the Orange party triumphed in the Netherlands. The other states hesitated between their fears of being dominated over by Holland or by the prince of Orange. It was not till the year 1667 that De Witt obtained the assent of the States General to the perpetual edict, by which the office of stadtholder was declared to be for ever abolished. There was however no admixture of personal hostility to the prince of Orange in this persevering zeal for the destruction of his house's power. William, prince of Orange, (afterwards William II. of England) was towards him child, and thus the hatred against De Witt which his mother endeavoured to instil into him by flattering his own ambition, which rendered him ready enough to take advantage of the grand pensionary's unpopularity, always retained and expressed, in his guarded manner, a grateful and respectful sense of favour in which De Witt behaved towards him during his minority.

The next care of De Witt was to introduce order into the finances of the republic. In this he succeeded so well that the States of Holland presented a formal request to him that he would develop his financial system in writing.

Mutual respect had established a friendship that might almost be termed confidential between Viscont Turenne and De Witt. Turenne, in 1660, had endeavoured to persuade the French government to conclude treaties with Portugal and the United Provinces, as a check upon the ambition of Spain, but had been thwarted by Maximilian. On the death of that minister the viscount renewed his representations to Louis XIV., who left the affair entirely in his hands. The price at which Turenne obtained the signature of the treaty of commerce between France and the United Provinces, concluded in 1661, by which each state conceded to the other the entire freedom of commerce in their respective ports, and the States General guaranteed the possession of the Dutch West India Company's establishment to the Dutch, was guaranteed to the Dutch the right which they claimed of fishing off the coast of Great Britain and Ireland. The British cabinet made a feeble remonstrance against this last article, but Louis contrived to appease them for the time.

But the afront rankled in the public mind of England, and the commercial rivalry between that nation and Holland soon accumulated other grounds of complaint. The mariners and traders of the two countries had frequent quarrels on the coast of Africa and in the Indies, and persisted in representing the other as the aggressor. War was declared between Holland and England in 1665. De Witt invoked the aid of France, but in vain: Louis XIV. only pressed his rival by the intervention of his two brothers, the Duke of York and Prince Rupert of Hesse, who forced to seek shelter with the remnant of his fleet in the Texel. On this occasion De Witt gave a striking instance of the daring self-confidence which a great enterprise on land and sea alternately in his possession of the republic where the fleet could be refitted. The pilots refused to take upon them the responsibility of navigating the ships from the Texel to Antwerp, by a course which would secure them from the attack of the English fleet. But De Witt insisted, and his fleet was at last safely conveyed to the Shallows. De Witt repaired on board the fleet, took the responsibility from which skilled professional men shrank; conveyed the fleet in safety to Antwerp, where, under his energetic superintendence, it again took the sea in fighting trim. The squadron was at first defeated, but soon declared in favour of Holland, and ostentatiously offered orders to his fleet to join that of the United Provinces. No junction however took place, and after two more well-contested battles between the naval forces of Holland and France, peace was signed, by which France and Denmark became parties, in 1667, to the treaty in which Denmark and France became parties, between the belligerents, on the 30th of July, 1667.

De Witt endeavoured after the peace to concentrate his attention upon the internal organisation of the republic. The efforts against the establishment of the edict that allowed to be the first fruits of this determination. But the conduct of the French king soon interrupted these labours by drawing his attention to foreign affairs. Louis XIV. was determined to recover the Spanish Netherlands, and to degrade the States General, in view that they fell by right to his queen on the death of her father the king of Spain. Turenne took one fortification after another with his usual rapidity, and was advancing towards Brussels, when the marquis de Rodigo represented to the States General, that if France were allowed to conquer the Netherlands there would remain no barrier between it and the United Provinces. These representations were backed by those of Tempel sent by the English ministry to propose an alliance between the two powers, and a view to oblige France and Spain to conclude a peace. This assurance coincided with the policy of De Witt, who felt the danger of irritating France, and the equal danger of remaining passive witness of its aggression. Peace was signed on the 7th of February, and ratified on the 26th of April. At the same time the forces of the republic were successively augmented by De Witt: 30,000 infantry were raised, and quartered in the Indies, and four large ships put in commission. These negotiations were accelerated by the progress of the French arms in Fance Comité. The treaty disposed France to follow the overtures of peace, as the invasion of France. The court of Spain, on the other hand, would not refer the case to the court of Spain; and under the influence of De Witt and Temple the peace of Aix-la-Chapelle was signed on the 2nd of May, 1667. Louis assembled his anger at the part taken by the United Provinces in these negotiations till an opportunity of avenging himself should offer. In 1670 Charles II. was persuaded by the intrigue of
the French court to promise that England would withdraw from the Triple Alliance. In 1671 the bishop of Münster and several Roman Catholic princes of the Empire entered into a league with France for the purpose of reconquering some frontier towns which they alleged had been unjustly and forcibly taken from them by Sweden. In November, the council of regency appointed to conduct the affairs of state during the minority of Charles XI. was also detached from the interests of Holland. The inaction of De Witt which now appeared to the mob as insufficiency to prevent the bodies would appear accountable but for two circumstances which contributed to paralyse him. The first was the anarchical constitution of the republic, in which there was no central authority, every province and almost every town being a more or less independent state. The consent of an immense number of petty councils was necessary, composed of men whom immediate and visible danger alone could convince of the necessity of making the slightest sacrifices. The other circumstance was the great strength of the Orange party, to which a large portion of the members contributed: popular fickleness, tired of an administration of twenty years' standing; the number of disappointed candidates for office which had accumulated in the course of twenty years; the ineradicable malevolence of the Calvinistic class; and, lastly, the natural tendency of men to favour the pretensions of a house of real historical greatness. To this combination of adverse influences must the fact be ascribed which the event of the day has determined. The army was simultaneously assailed by the forces of Louis XIV. and the German princes, in the spring of 1672, the forts were held by garrisons weak alike in numbers and in the experience and want of discipline of the raw levies which composed them.

The partisans of the House of Orange seized the opportunity of national alarm and confusion to clamour for the repeal of the perpetual edict. De Witt and his friends were still strong enough to refuse this demand, but not to prevent the choice of Prince Orange by the States General, and the appointment of a new provincial council. 

On the 23rd of June, 1673, he is said to have served several years in the fleet of the United Provinces in his early youth. His later career however was essentially that of a civilian. On the overthrow of the Orange party in 1660 he was appointed administrator of his native town and elected deputy to the States of Holland and West Friesland. Soon after he was chosen inspector of dykes in the district of Putten. Ostensibly he held no higher office during the greater part of his brother's administration; but the confidence which his firmness, probity, business talent, and sound sense acquired from all rendered him in reality the most efficient supporter of his brother's power. As has been mentioned in the preceding sketch, he held a prominent position in the fleet during the years 1672; and in 1667 he had filled a similar post. On both occasions he distinguished himself by his bravery in action. After the battle of Solebay he was obliged to leave the fleet by a violent malady, and retired to Doorninck. Before his arrival the other magistrates had signed the re-vocation of the perpetual edict. A tumultuous crowd intruded itself into his sick room, demanding his signature to the document. With great difficulty his friends persuaded him to comply; but he added the initials V. C. (vocantur) to his name, and refusing to erase them, the mob was only pacified by one of his attendants doing it unknown to him. He was soon after arrested on a false accusation of conspiring to poison the prince of Orange, and was banished from the province. There, however, the mob resisted his command, and after the death of the rack he is said to have repeated Horace's ode, which begins, 'Justum et tenacem propositi virum.' On the 24th of July he was condemned to perpetual exile, and his subsequent fate has already been narrated.

On the 3rd of August, in the life of Cornelius de Witt are the same mentioned above in the sketch of his brother's career. Some valuable materials are also to be found for the history of both brothers in the works of Sir William Temple and the other historians of the time.
many cartoons to be worked in tapestry. He was afterward invited, while in Italy, by the elector of Bavaria, to go to Munich, and enter his service, which he did, and he remained there many years, until his death in 1628, and all works of art produced in his time were executed under his direction. He painted, under the arcade of the long gallery of the Hof-garten at Munich, a series of frescoes representing the deeds of Otto of Wittelsbach, and the departure of the emperor Ludwig IV. for Rome in 1327. The paintings were whitewashed over; the designs however are preserved in the tapestries which were worked from his designs in the engraving which were made by Amling from the tapestries; the prints are marked with the name of Pietro Candido as the painter. Amling engraved thirteen plates from these tapestries, representing the histories of the emperors Otto, Louis of Bavaria, and Otto of Wittelsbach, according to Huter, (Van Mander; Heinichen; Huber; Fiorillo; Dillia, Catalogue of the Gallery of Schlesischein.)

WITTELBACHIA, the name of a genus of plants belonging to the natural order Torontiflorae. The two species referred to this genus are now placed with Cochlospermum, which has the following characters:—the calyx of 5 permanent oval-oblong, blunt, unequal, imbricate sepals, the two outer ones of which are smallest, the whole becoming at length reflexed; the petals are 5, permanent, somewhat resembling the calyx in the aspect, unequal, and twisted in the bud; the stamens are numerous, having smooth filiform filaments, and linear 4-celled 4-sided anthers, which are fixed at the base, and open by a single pore at the apex; the style is biseriate, somewhat hooked at the top; the capsules surrounded by the permanent calyx, petals, and stamens, with, from 3 to 5 cells, and the same number of valves; the seeds are numerous and covered with wool, and contain a fleshly albumen, in which lies a siccus, in the cavity of which are the radicles pointing towards the hilum. The species of Cochlospermum are magnificent trees. They have lobed leaves with pointed petioles, and large yellow flowers arranged in panicles.

C. goyazum has 5-lobed entire leaves, which are borne on the thorny branches, and large yellow flowers. Saxony is a native of the East Indies, where it attains a height of 50 feet. It is the Bombax goyazum of Linnaeus. The C. ornitocense has smooth 5-7-lobed leaves, is a native of New Spain, and attains a height of about 20 feet.

C. instigus, the Wittebergia is the instigus of Martius, has conicaceous leaves palmately 5-lobed, the lobes coarsely, sharply, and doubly serrated. This tree is about thirty feet in height, and is a native of Minas Novas and Minas Geraes, Brazil. It is known by the name of Bauhin Caruru, and a decoction of its roots is used as a remedy for internal pain. It is also given internally in cases of accidents, and as a means of resolving abscesses. The remaining species of Cochlospermum is the Wittelsbachia of Martius. It has smooth leaves, in form like those of the vine.

All the species are handsome trees. They will grow in a soil composed of loam and peat, and may be propagated by cuttings, which should be placed under a hand-glass in a moist heat, or they may be raised from seed.

WITTENBERG, a town in the government of Meiserburg, in the Prussian province of Saxony, situated on a level sandy spot on the banks of the Elbe, over which there is a wooden bridge 1000 feet long and 25 feet wide, in the Prussian province of Saxony. The town is a fortified town, and has three gates. It was formerly a place of great strength, but in 1790 it was besieged by the Imperial army, and bombarded from the 10th to the 14th of October, by which the Prussian governor, Colonel Salvesen, was killed. It was captured in the siege, and 18 public buildings and 101 houses were destroyed. The works were then suffered to fall into decay, but as it had still a rampart and moat, it was fortified in 1813, as well as the other towns that would allow it. By command of Napoleon, on the advance of the Russians. It was subsequently besieged by the Prussians, who, as the French general Lapripye refused to surrender, took it by storm, in January, 1814. In this siege 299 houses were either burnt or pulled down. In the 15th and 16th centuries Wittenberg was the capital of the electoral circle of Saxony and the residence of the court. The University, one of the oldest in Germany, was founded in 1502, by the elector Frederic the Wise, by whom it was very amply endowed. In 1508 Luther was appointed Professor of Philosophy in the university, and, on the 31st October, 1517, he posted his famous Ninety-five Theses on the doors of the castle church of St. Mary's. He was thereupon created professor of theology, and was allowed the right to teach in the university. He was at this time a young man, 29 years of age, and had already celebrated 95 theses or propositions against indulgences. The tombs of Luther and Melanchthon, and of the electors Frederick the Wise and John the Constant, and the portraits of Frederick the Wise and of Melanchthon, by Cranach, were placed in this church. It suffered greatly in the years 1760 and 1814, but was restored in 1819, at the expense of the king of Prussia. Of the other four churches the most interesting is that which contains the tomb of Leopold I., father of Leopold II., King of Hungary, and which in which there is a celebrated picture, by Cranach, of the Last Supper. The town-hall likewise contains some paintings by the same eminent master. On the celebration of the third centenary of the Reformation, in 1817, the king of Prussia laid the first stone of a monument in honor of Luther. This monument stands in the market-place, and consists of a colossal bronze statue of Luther from a model by Schadow, on a pedestal seven feet and a half high, resting on a block of granite weighing 26 tons. About its base is the figure of the king in the guise of the Roman Emperor, and the following inscription:—

Die Wurzeln des preussischen Staates; Rodenius, Franz-Sources pour l'Estinction: Haeckel, Die Pflanzen Monarchie.

WITTENSTEIN is the name of a noble German family, which is probably descended from one of the Frankish nobles upon whom Charlemagne conferred extensive fiefs in the Duchy of Saxony. The name of Sayn-Wittgenstein, although it never possessed the county of Sayn. The former county of Wittgenstein was situated in the southern corner of Westphalia, and the sources of the Sieg and the Lahn, a mountainous river large, have a considerable number of woollen-cloth and linen, breweries, distilleries, and dyeworks. They likewise cultivate extensive gardens, and derive considerable profit from the Elbe fishery.

(Müller, Wörterbuch des Preussischen Staates; Rodenius, Franz-Sources pour l'Estinction: Haeckel, Die Pflanzen Monarchie.)

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to the coalition (August, 1813). Prince Schwarzenberg was invested with the command-in-chief of the united forces of the allies, and Wittgenstein was superseded in his command by Barclay de Tolly for the Russian forces, and by Blücher for the Prussian army. He nevertheless continued in command of a strong division of the Prussian army, and in the battle of Leipsig (16th-18th October, 1813) he was at the head of 70,000 men, with whom he occupied the position round the villages of Mark-Kleeburg, Wachau, and Liebertwolkwitz. In the campaign of 1814, in France, Wittgenstein, in command of his old division, played some considerable part in the neighbourhood of Paris, but Napoleon defeated him in the battles of Marmont and Nangis. After the war with Napoleon was terminated by the two peacec of Paris, Alexander rewarded him with extensive estates in Po- dolic, and in 1822 he became governor of a city which he named Mutius. Wittgenstein became very infirmities, but this was derived from his commands during the war in France. In 1832, he was laid up with a severe illness, but the war in France was decided for good. In 1833, he became the command-in-chief against the Turks. The first campaign resulted in the capture of the Pruth and the Danube, and the conquest of Brulla, Isaksha, Varna, and other fortes, by which the war was decided. The war, however, was balanced by severe losses, and generally the result of the campaign did not satisfy the Tsars' expectations of the Russian officers, who would have preferred a bold and enterprising general to a leader of tactics, large and skilled in war, who were less the result of age than of fatigue. Wittgenstein was recalled on the 18th of February, 1829, but the emperor did not dismiss him without giving him new proofs of his esteem and generosity. Wittgenstein retired to his estate in July, 1831, and died in the beginning of the summer of 1843. In 1834 the king of Prussia conferred upon him and his successors the title of prince. The different histories of the war with Napoleon give a full account of the man who was to be subject to criticism, of whom Volume II of Oebel's Geschicht der Feldzüge Saches, 3rd edition, 1841, Von Plotho, Der Krieg in Deutschland und Frankreich in 1813 and 1814, 4 vols. 1819.

Conversations-Lexicon der Gegenwart.

EDRICH VON TROMLITZ, better known as a writer by his literary pseudonym of Von Tromlitz, the name of his father's estate near Weimar, where he was born on March 17, 1772. At the age of nine years, he was enrolled among the pages of the court of Weimar, and was allowed to prepare the court garden; having entered very early into the Prussian service he obtained advancement in it, and distinguished himself in the Rhine campaigns of 1792-95. It was about the same time that he made his first literary attempt, being evinced to the greatest advantage. The first book that appeared under the name of Jurgen von der Deutschen am Rhine, the author of which lived only to finish the first volume; and he also wrote several political pamphlets, at that period, and his romance Das Stille Thal. Though Schwilling had himself chiefly by his literary talent, that production was his last, until about twenty years afterwards, when he again appeared as a writer.

During that interval he was constantly engaged in military service, of which he recorded a great deal in various campaigns;—was at the battle of Jena; was taken prisoner at Premisau; became a commander of infantry in the army of the grand-duke of Berg (Murat); had a regiment in the Peninsular war, in 1811, when he was passed to the black regiment of foot, and in 1815 to the French; and in 1819 became a colonel in the Russian service. At the general peace his military career terminated, and he retired to Beuchlitz near Halle, where he followed farming for about the next seven years, and then went to Engtelein, where he made literary operations. He did not however remain at Berlin many years, but in 1826 removed to Dresden, in which city and in the neighbourhood he continued to reside till his death, July 28, 1839.

The name of Tromlitz was both a fertile writer and a favourite one with the public, is tolerably evident from three editions of his collected tales and novels;—two in 36, the last in 27 volumes—having passed through the press between 1833 and 1840. He distinguished himself chiefly by his historical romances—a species of literature greatly in vogue, and in which he took Scott for his model, and with perhaps as much success as any other of his imitators. Interest of story, cleverness of invention, and an agreeable style of narrative, sufficiently recommended his productions of that class to readers in general, though it has been alleged that they show no very great knowledge or deep insight into human nature. Those of most note among them are:—Die Pappenheimer, Frantz von Sickingen, Mutius Sforza, Das Leben des Markgrafen Albrecht von Brandenburg, and Die Carreras. He also made a strong attempt at the drama in his Don Quixote (1836), but not with such success as to encourage him to pursue that career.

Conversations-Lexicon der Neuesten Zeit; Wolf, Encyclopädie der National Literatur.

W. U. VIVELISCOMBE.

WOAD (Isatis tinctoria) is a plant which was once cultivated in Britain to a great extent for the blue dye extracted from it. It has been greatly superseded by indigo, which gives a stronger and finer blue; but on some soils it might be still cultivated to great advantage, especially as it is said to improve the quality and colour of indigo when mixed with it in a certain proportion.

The woad is a plant of the natural order of the Cruciferae, and derived from the mustard family. It is a strong tap-root, which lasts two years. The height of the plant when in perfection is from three to four feet. It throws out many branches from the upper part of the stem. The leaves are alternate and smooth, the lower on foot-stalks, the upper ones sessile, long and arrow-shaped. The flowers are yellow, in panicles at the extremity of the branches. The fruit is a heart-shaped pod, with two valves containing one seed only. It grows well on the borders of the Baltic, and is very hardy.

It is still cultivated to a considerable extent in the south of France and Flanders. It requires a good substantial soil of considerable depth and fertility; for the larger and more numerous the leaves are, the more profit is derived from the plant. The clay or loam is not so good for its growth, nor a loose sandy one. The first would prevent its roots striking sufficiently deep in search of nourishment, and the latter would be too loose, and not keep up a sufficient degree of moisture.

When it was largely cultivated in England, old pastures ploughed up afforded the best soil for the woad to grow in. These were often taken at a very high rent for two years by men who made it their business to cultivate the woad, and who found no profit in its cultivation. In consequence of this practice some proprietors prohibited their tenants from cultivating woad, a short-sighted policy equally injurious to both. To have good woad the land should be naturally very rich, or much manured beforehand; and the leaves should be gathered when not ripe, but just beginning to ripen. Nothing but completely decomposed dung should be used, or compost made on purpose a long time before.

The land, having been prepared by repeated ploughings and perfectly clear of hayfields, should be kept very close with a depth of six inches. On these beds the seed is sown in February or very early in March. It is sometimes sown broadcast, and the plants thinned out, but sowing it in drills, two rows on a four-feet bed, is much the best practice. The drills are one foot from the edge, with two feet clear between them; some make five-feet beds, and there is an interval of thirty inches between the rows, which allows of better cleaning, and gives the plants more room to spread. When the plants are come up in the rows, they must be thinned by hand, leaving, when the leaves are about three inches long, two leaves only to each plant; the leaves will soon fill up the intervals. They begin to ripen in June. They are fit to gather when they begin to droop and become yellowish. This should be done in very dry weather, and after the leaves have either twisted off close to the stems or cut down with a sickle. Great care must be taken that no dirt or earth adheres to them. Some recommend taking off the lower leaves first, when they appear ripe by drooping and turning yellow, and letting the upper ones remain until they have given up appearance; then nothing but ripe leaves will be gathered. This stripping may be repeated two or three times as the leaves grow again. The plants destined for seed are only stripped once or twice, for fear of weakening them, but probably be advanced two or three years from them at all, but to leave the whole strength for the formation of 3. 3. 2.
seed, which will be larger, and produce finer plants the next year.

The gathering of the leaves is the best; they should therefore be kept separate to obtain the best dye. As soon as the leaves are gathered, the breads should be well and deeply hoed or dug, to give a fresh impulse to the roots. The leaves are naturally full of sap, and soon begin to decay if not laid in a heap. They should therefore be partially dried, and immediately carried to the mill to be manufactured.

There is a variety of this plant cultivated in Flanders and about Valenciennes, which has seeds of a violet colour, and from which it is larger than the other, and gives a better dye. It is that which is cultivated near Avignon, whence the best woof dye is procured. The leaves are ground in a mill, like an oil-mill, into a paste, which, when quite uniform and smooth is laid in hoops to dry. The paste is mixed with the leaves in a mass: each addition is carefully joined to the preceding, so that the whole crop forms a long heap. A fermentation is soon established, by which the blue dye is separated. A black crust is formed all over the heap, which is in the gases produced. If any part of the crust is cracked, it must be immediately stopped up with some of the paste. It takes a fortnight to complete the operation. When the disengagement of phosphorated ammoniacal gas ceases, which is soon perceived by the smell and the crust is broken up, the inside, and small portions like bricks, of about one pound weight, are made up with the hands by pressure in a mould, when dry are fit for sale. As great attention is paid to the growing of the plant, it is best done by those who make a trade of it, and have the necessary experience. When the crop succeeds, the profit is very considerable; but, like all other crops, it is liable to many accidents.

Wodrow, on 21st March, 1707, over cut his small parish gave him the best plant of it for the accomplishment of his projected works, and though repeatedly invited to accept of more important ministerial charges, in Glasgow and in Stirling, he spent the remainder of his days at Eastwood, a large country seat, as a church politician; he punctually attended the ecclesiastical courts, and had much influence on their deliberation. He was chosen one of a committee of Presbytery at the commission of the Assembly in Edinburgh in the production of 1712, Scotland, on the convocation of the Union of 1707. He exerted himself in oppressing the act of 1712 for re-establishing patronage, the same which, after having been for 130 years a source of drains in the Church of Scotland, caused the great accession of the Church of England; and he was a member of the committee of five clergymen who, on the accession of George I., were deputed by the General Assembly to proceed to London, and urge the repeal of the obnoxious Patronage Act. Defeated in his object, he became engaged in his life in a great work, not finally recommended a subscription to the law as it stood, and in giving a beneficial effect to its operations. Yielding however on this point, he was one of those clergy who steadily resisted the impotence of the oath of abjuration; to which he was repeatedly in 1743, refused to be sworn at the same time among the best friends of the Hanover succession. Though he objected to the tendency of those involving a principle of civil government, to churchmen, he was at last, by preparing the publication of his articles of faith—that is to say, the articles of faith of his own church: and he conducted a long and laborious and obstinate controversy on the subject with the support of the independent principle in England and Ireland.

He died on 25th April, 1754, remaining to give a cursory notice of his literary labours. His History of the Sufferings of the Church of Scotland, from the Reformation to the Revolution, was published in two volumes, 8vo, in 1721-1722. A few years ago it was a scarce and high priced book. As a work, it was a publication which a publication in the library of the University of Glasgow. A considerable number of the Lives have been printed by the National Club, and a portion of the work is among the publications of the Wodrow Society. The late Mr. Wodrow was a minute historian. In tracing the sufferings of the Presbyterian nonconformists during the reign of Charles II., he undertook a subject a relation to which the bitterest feelings of indignation were still alive in the circle of society to which he belonged. The articles of his own church: and he conducted a long and laborious and obstinate controversy on the subject with the support of the independent principle in England and Ireland.

Wodrow, Robert, an antiquary and ecclesiastical historian, second son of James Wodrow, professor of divinity in the University of Glasgow, was born in that city in 1679. He studied at his native university, which he entered in 1691. While studying theology under his father, he was appointed librarian of the college, an office very congenial to his taste and nature. He was ordained minister of Eastwood in Renfrewshire, a parish situated between Glasgow and Paisley. His history from this period to his death is almost entirely that of his literary labours. He felt that the scenes of light duties of a retired and small parish gave him the best chance to use for the accomplishment of his projected works, and though repeatedly invited to accept of more important ministerial charges, in Glasgow and in Stirling, he spent the remainder of his days at Eastwood, a large country seat, as a church politician; he punctually attended the ecclesiastical courts, and had much influence on their deliberation. He was chosen one of a committee of Presbytery at the commission of the Assembly in Edinburgh in the production of 1712, Scotland, on the convocation of the Union of 1707. He exerted himself in oppressing the act of 1712 for re-establishing patronage, the same which, after having been for 130 years a source of drains in the Church of Scotland, caused the great accession of the Church of England; and he was a member of the committee of five clergymen who, on the accession of George I., were deputed by the General Assembly to proceed to London, and urge the repeal of the obnoxious Patronage Act. Defeated in his object, he became engaged in his life in a great work, not finally recommended a subscription to the law as it stood, and in giving a beneficial effect to its operations. Yielding however on this point, he was one of those clergy who steadily resisted the impotence of the oath of abjuration; to which he was repeatedly in 1743, refused to be sworn at the same time among the best friends of the Hanover succession. Though he objected to the tendency of those involving a principle of civil government, to churchmen, he was at last, by preparing the publication of his articles of faith—that is to say, the articles of faith of his own church: and he conducted a long and laborious and obstinate controversy on the subject with the support of the independent principle in England and Ireland.

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Woburn. [Bedfordshire.]
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for which the narrator 'pledges his belief,' yet always as told him by some person worthy of credit: 'Mr. John Wode was preaching at a conventicle, and there was one cast a long line in mind. "Wode," he said, and told them he knew not the person that had done so, but he was persuaded they would be more persons at that person's death then they were hearing him preach that day. He added that he was a gentleman, and that he had been at Philip Stanfield's execution for murdering his father, and this Philip was the person that thus mocked Mr. Welsh in his youth.' Of course all the miraculous interpositions and special providences act in favour of the nar-

tory by the learned French refugee La Croze, who pub-
lished his preface to it in 1722, in the 'Bremer Ephemer-

rden. The work however remained in MS., which was

revised, abridged, and completed in others by Scholz.
The revised MS. became the property of the

library of Leyden, where it was examined by Wode, who

conceived the idea of publishing it. It is said that there

was then no printing to be had in England, so that the

work was written with Coptic characters, and the

university of Oxford liberty undertook to bear the expense.

Part of the work was already printed, when Wode was requested to make some additions to it, which he could only do for the three last letters of the Coptic alphabet; for in that part the only addition was a

the Advocates' Library amount to several hundred volumes. They are the collections made by the historian for the prosecution of his intended works. Many of them are original state-papers and letters, English and Scottich, bound up in volumes, with contents in Wodrow's hand-

writing. Others are copies taken by himself of documents of which the originals in many cases are not now to be

found. This collection, with his printed works, and many hundreds of long letters on ecclesiastical matters, are a standing illustration of his real untiring industry. In

May, 1841, the 'Wodore Society' already referred to was

instituted for the publication of the works of the fathers and early writers of the Reformed Church of Scotland.'

WOELPI, JOSEPH, a composer and performer on the piano-forte, who much distinguished himself by his talents during his short life, was born at Salzburg, in 1772, where he received instructions from Leopold Mozart, father of an actual composer. In 1787, after a short residence in Dresden, he was the brother of the less illustrious father of modern symphony.

After a short musical tour he reached Vienna in 1785, and

there successfully produced his first opera. He then visited

Dresden, Berlin, Hamburg, &c., and arrived in London in 1787, where he remained, composing and giving lessons.

Two years, then proceeded to Paris, and in all those cities

excited great admiration by his powers of execution. He

returned to England in a few months, and resided in his

capital till his death, which took place in 1811.

His hands, which were of gigantic dimensions, enabled him
to do, by means of their capacious grasp and strength,

what none of his contemporaries could accomplish, thus

making him, as it were, the precursor of the living Thalberg;

and his profound knowledge of the art, his untiring industry.

His compositions are numerous, ex-

ceeding to nearly every branch of the art, and all prove him
to have been a thorough-bred musician, though many were

written for the sake of sale, and others never ex-

posed and too difficult to be popular. Nevertheless,

he not indulged to excess in that habit which his

way was so prevalent with his countrymen, and which

would have been the ruin of his talent. He wrote, as a rule, in the style of modern German music, and probably would have made a reputation little inferior to that of the great musical triumvirate of modern Germany.

WOIDE, CHARLES GODFREY, was a native of Hol-

land, or of Poland according to Lechtreau-Gauthy, in the

Biographie Universelle,' who also says that he was born

in 1725, and that he studied at Frankfort-on-the-Oder and

Leyden. In 1770 he was invited to England, being ap-

pointed preacher at the German Royal Chapel, St. James's,

where he remained, composing and giving lessons. He was

appointed assistant-librarian at the British Museum, in the

department of natural history, and soon afterwards in the

department of printed books. The university of Copen-

hagen conferred upon him the degree of D.D. in 1785,

and in 1786 he was chosen a fellow of the Royal Society.

On the 6th of May, 1790, he was seized with an apoplectic

fit in the house of Sir Joseph Banks, and he died on the fol-

lowing day, in his apartment in the Narrow Street, near

Chandos. His will was written in Latin, and was left two

daughters by his wife, who died in 1782.

His principal literary productions are:—1, 'Mathurin

evastitit di Croze, Lexicon Cae
di XIV. Arm. 12. & e॰

evo-

rius Illust. Linguae Mon

sus, quod in Compendium

de Christo,

C.

D.', Wode, and Selden; 

Typographia Clarendon. Oxford,

775, 4to. This is a dictionary of the Coptic language,

which was made at the beginning of the eighteenth cen-


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The next twelve years of his life were spent in attempting to establish himself as a physician at Truro, Helstone, and other towns in Cornwall. In this he uniformly failed, apparently on account of an invincible propensity to live as a practical humorist and satirise his neighbours. During his residence in Truro, some sonata, composition was sent to music by Mr. W. Jackson, of Exeter, and first introduced him to general notice. In 1778 he published his first composition in that peculiar style which not long after had obtained for him such a high and extended celebrity.—The Epistle to the Reviewers. It was during Wolcott's residence at Truro too that he detected the talents of the self-taught artist Opie. With this protégé he, in 1780, transferred his residence to the metropolis. Wolcott's first attempt of this kind, his art appearing in full maturity, is his Fine and Length I proposed to him to go first to Exeter and afterwards to London, and having lost an income of 300l. or 400l. by the change of scene, entered into a written engagement, by which it was agreed we should share the joint profits in equal division. This public service was so good and so services to the country, as he could now do for himself. That his pupil, as he terms him, should have done so is scarcely to be wondered at, for it does not appear that Wolcott contributed to the study of the joint he supported, and sustained any pecuniary loss by his change of residence.

No opening offering itself in the metropolis, either in physic or divinity, Wolcott was obliged to betake himself to sea, and to the support of his situation and ambitious. He suggested the subject of his first publication:—Lyrical Odes to the Royal Academicians for 1782, by Peter Findar, Esq., a distant relation of the Poot of Thebes, and Laureate to the Academy;" took the town by surprise. The justice of many of his remarks, the reckless freedom of the personality, the quaintness of the style, were something so entirely new that the work obtained immediate popularity. Encouraged by success the author returned to the attack in 1783, 1785, and 1786. But he soon discovered that, in order to keep alive his influence, he must bring into his line of criticism that the more daring he was in the selection of his objects of attack, the more would his works be run after, and the less would he incur any real danger. The king, ministers, opposition leaders, and authors, were assailed in succession. The popular public took a deep interest in his endeavours, and the more the reader discovered that they were different species; while Prince Maximilian Wied, perhaps still more practically conversant with the races of both continents, thinks that they are not specifically distinct.

With regard to the American Wolves, Colonel Smith remarks that whether they be distinct from those of the eastern hemisphere, or primeval varieties, is not yet satisfactorily established. The high authority of his book has been confirmed by his own experience; for they are different species; while Prince Maximilian Wied, perhaps still more practically conversant with the races of both continents, thinks that they are not specifically distinct. To this last-mentioned opinion Colonel Smith states that his own observations led him to subscribe; but he qualifies this statement by observing that while our ideas respecting the characteristics of species remain unsettled, the difference of conclusion appears, only formal.

In the succeeding year, the following wolves appear as distinct species,—the Common Wolf, Canis lupus, Linn.; the Mexican Wolf, Canis mexicanus, Desm.; the Red Wolf, Canis jubatus, Desm.; the Prairie Wolf, Canis bairdi, Harz. and; the Dusky Wolf, Lupus aethiopicus, Say.

Geographical Distribution of the Wolves. Colonel Smith observes that the typical Wolf of Europe and Asia, and the varieties belonging to this tribe in America, are described as animals occurring in the two continents from within the Arctic circle on the north, to Spain, and perhaps to Morocco on the west side of the Old Continent; to Syria, and beyond the Caspian in Asia; and to near the isthmus of Panama in the New World. Further south of these we lose track of these animals, which are replaced by an aberrant canine, the Red Wolf of Costa Rica, and in the first, by hyenas, the Painted Lycaon or Canis pictus, and perhaps by other species not yet fully developed. In China," says Colonel Smith, "the wolf has a very curious appearance, and is not an amiable one. His attempt to support himself by the labours of Opie has already been noticed. After all his biting satires on George III. and Pitt, he accepted a pension from the administration of which Pitt was the head—not to laud it (for praise was not in his nature) but to vituperate its opponents. He took orders and even officiated as a clergyman, though an avowed and profane unbeliever. He had a shrewd intellect; a just taste in the arts of design and music (a subject in which he was extremely expert), and he published an extensive and admirable work under the title "Pictorial Views," and some of his tunes have attained a permanent popularity; and his literary compositions have the finish of an artist, but his utter selflessness rendered these intellectual labours scarcely more elevated in him than his sensual appetites, which were equally regulated by taste and judgment. He was the perfection of a self-asserted vulgarity both in physical and intellectual respects.

Wolcott's constitution was probably naturally strong, for he attained to the advanced age of eighty-one. But for many years previous to his death he was the victim of asthma and acute jaundice, and his mind and body were, however retained its full powers. He lived only for himself; declined dinner invitations "to avoid the danger of loading his stomach with more than nature required;" but at the same time, because "to walk merrily in me to be groping around my drawing-room," because 'when up and in motion I am obliged to carry a load of eleven or twelve stone, while here I have only a few ounces of blankets to support;" and when out of bed he amazed himself with his violin, towards the end of his sight permitted, his crayons and pictures. He knew no aversion to receive notoriety-hunters who came to hear "Peter Findar," but evinced no desire for society. He left a considerable property to his relations. Wolcott died on the 14th of January, 1813, a week after his marriage in the churchyard of St. Paul's, Covent Garden.

(Annual Biography and Obituary for 1823.)

WOLF, Canis lupus, Linn. Lieutenant-colonel Colonel Smith makes Wolcot the first section of his first genus, Canis, of the Division of Carnivora or Canine纲, furnished with a round pupil of the eye.

In this section he comprises the common Wolf, Lycaon; the Black Wolf, Lupus *lycan*, the Dusky Wolf, Lupus *aethiopicus*, and the various species of the Mexican States of North America, Lupus *mexicanus*, Smith.

In the second section, Lycaon, or, as he terms his group, the Lyciscan Dogs, he places the North American, Lycaon *iurarius*; and the Caygote of Mexico, Lycaon *canus*, Cuv. The species of this section are described as being distinguished from each other by their coloration, and by a smaller size. In the American Canis, it appears in a much more developed form.
pieris of the dwelling were satisfied, from the well-marked impressions of their feet in the sand, that the animals came together, and perceived the place whence they had taken away two fish: double colour, each knew own. This theft, he adds, was moderate for two such carnivorous animals, but they did not choose the smallest. I do not know, continues the French traveller, that it has been before observed that the wolf goes (frayé) with the lion; but it is not extraordinary; there are daily proofs of it in this country, and every evening the wolf may be heard howling at the side of the lion. I have witnessed the same thing a hundred times in all my voyages on the Niger, and know, without possibility of doubt, that the lions and wolves are not exclusive of each other; there is nothing to fear. It is not that the size of the African wolf, which is much inferior to that of the wolf of Europe, makes any impression on the lion; it is only because the African flesh is not fit, I may say, to satisfy the latter: and what confirms me in this opinion is that I never saw the two lions which were kept in the middle of the village of Senegal attack the dogs which were exposed to them, or which they met when they were unchained; whereas they fell upon the first horse or child which came in their way.'

Le Vaillant and the French generally call the Spotted Hyena Loup tacheté; and the terms Tigre and Tigresse are used generally for any large spotted cat. Thus we use the term 'tigre du tigre' in the following passage: 'And the next sentence, where he says— Some days after this visit of the lion with the wolf, we received one from a Tigresse which came to the same place with her young one and also carried away two fish.' In the New History of Ethiopia, in describing a Descrabea, or, as they call it, the Kingdom of Abesenia, vulgarly, though erroneously, called the Empire of Prester John. In four books. By the learned Job Ludolphi, author of the Ethipien Lexicon. Made English by J. F. Gent. Folio, London, 1692, is the following passage: 'They are more cruel and fierce than lions, yet they savour mankind; yet they covet the Ethiopians before white men, and are more accustomcd to that sort of dyet. These two beasts have ears like five-leaved grass: It is almost superfluous to add, that the Tigre, properly so called, does not inhabit Africa.'

**EUROPEAN WOLVES.**

The Common Wolf—Yellowish or fulvous grey. Hair harsh and strong, longest below the ears and on the neck particularly the throat), shoulders, and haunches. Muzzle black: cheeks and parts above the eyes ochreous—grey in very old subjects. Upper lip and chin white. Eyes oblique, and shaded about the canthus. Ears black, pointed, and spotted with black; the tigress has her ears spotted with black; the tiger has them spotted with black, with fine black spots. Blackish ring on the crown, and blackish tail. Feet blackish. The ears are spotted with black, with fine black spots, like five-leaved grass: they are a beast of a dreadful cacity and boldness; by night they break into villages, and make dasteful massacres among the poor innocent cattle.'—Alvarez affirms that these butchers never happen in Medr-Bahr. It is almost superfluous to add, that the Tigre, properly so called, does not inhabit Africa.
that the Rosomak of the Lenas in Siberia, with shining black valuable fur, is probably the same.

**Habits, &c.**—The period of gestation and that during which the young remain blind will be found, with other particulars relating to the habits of the Wolf, in the article Dog. The female produces four or five at a litter; and although it is said, that until the young can see the female carefully hides them from the male, for fear he should devour them, it is certain that he hunts for them and brings them food, consisting for the most part of the smaller quadrupeds, partridges, moor-game, &c., after they have the use of their eyes, and that both parents take their offspring out to teach them to hunt as soon as they are strong enough.

**American Wolves.**

Dr. Richardson, in the "Fauna Boreali-Americana," observes to the Countrymen of the Old and New World, that they have been generally supposed to belong to a species—the Canis lupus of Linnaeus. The American naturalists have indeed, he remarks, described some of the northern kinds of wolf as distinct; but it never seems to have been doubted that a wolf, belonging to the genus of the European Wolf exists within the limits of the United States. Dr. Richardson goes on to point out that the wolf to which these characters have been ascribed seems to be the *lupus lapius* of Lewis and Clark: and according to them, this species inhabits not only the whole border of the Pacific and the mountains that approach the Columbia river, between the great fall and rapid basins, but is not found on the Missouri to the limits of the Platte. Dr. Richardson remarks that he has seen none of these Brown Wolves; but if their resemblance is close to the European Wolf as Colonel Smith, in给filsh's "Cuvier," states it to be, the Doctor has no hesitancy in saying that they differ decidedly from the wolf which inhabits the countries north of Canada.

In the "View Description of Virginia" (1649) wolves are mentioned among the beasts found there; and Lewis notices the Wolf in Carolina, and thus describes him:—"The Wolf of Carolina is the dog of the woods. The Indians had no other curs before the Christian era among them. They are of meeker frame, and are not large nor fierce as the European Wolf. They are not man-slayers, neither is any creature in Carolina unless wounded. They go in great droves in the night to hunt deer, which they do as well as the best of hounds, and may, one of them, consternate a wood. They are often so poor that they can hardly run. When they catch any prey, they go to a swamp and fill their bellies full of mud; if afterwards they chance to get any flesh, they will discharge it away. When they hunt in the night, that there is a great noise together, they make the most hideous and frightening noise that ever was heard. The fur makes good mats. The skin, dressed to a parchment, makes the best drab and gray cloth, and if tanned makes the best sort of shoes for the savage countries."

Catesby says:—"The Wolves in America are the true Wolf of Europe in shape and colour, but are somewhat smaller. They are more timorous and not so voracious as those in Europe; a drove of them were observed in a single day in very severe weather there have been some instances of the contrary. Wolves were domestic with the Indians, who had no other dogs before those of Europe were introduced, since which the breed of wolves and such dogs have become mixed and become intermixed. It is probable that the European dogs that have no mixture of wolf blood have an antipathy to those, that have, and many them whenever they meet. The wolf-bred not only do ferociously, and, with its tail between its legs, endeavor to avoid the other's fury. The wolves in Carolina are very numerous, and more destructive than any other animal. They go in droves by night, and hunt deer, hares, and most of the small game, barking and yawning night and day."

**Asiatic Wolves.**

The Wolves of Asia Minor are furious, but the colour is more predominant and has more red in it than that of the Italian Wolves.

Of the Indian Wolves, one, the *Hirana*, is described as being of a light fox-colour inclining to dun, not larger than a greyhound, slenderly made, but bony; the head and ears long, like those of a Jackal, and the tail long but not very hairy. The other, which is smaller, Col. Smith refers to his lyre-anan group. The last-named zoologist refers the black Desmoull of the mountains of Arabia and the south of Syria to the Wolf.

**American Wolves.**

Although the wolf is generally supposed to belong to the same species as the European Wolf, Dr. Richardson has described two species of the genus *Canis* that are distinctive of North America. The first is the *Canis lupus occidentalis*, which he describes as having a more slender build and a lighter coloration than the European species. The second is the *Canis lupus occidentalis* var. *Canis lupus occidentalis* var. *Canis lupus occidentalis* var. *Canis lupus occidentalis* var. *Canis lupus occidentalis*. This species is characterized by a greyish-brown coat with a white underbelly, and it is found in the western United States, where it is known as the "grey wolf" or "lone wolf."

Dr. Richardson also describes the "tundra wolf" or "wolf of the tundra," which is found in the Arctic regions of North America and is distinguished by its small size and light-colored coat, often tinged with red. This species is typically found in the high arctic tundra and is adapted to the harsh conditions of the Arctic climate.

**Asiatic Wolves.**

The Asiatic Wolves are generally larger than their European counterparts and have a more robust build. They are found in various parts of Asia, including the mountains of Central Asia, the steppes of Eastern Europe, and the tundra regions of Siberia. The colour of the Asiatic Wolf is typically a light, sandy-brown, with a distinctive white rump. The tail is short and bushy, and the ears are relatively large and pointed.

Dr. Richardson notes that the Asiatic Wolf is not as aggressive as its European counterpart and is less likely to attack humans. It is primarily a scavenger, feeding on the remains of larger animals such as elk and bison. In the absence of such prey, it will also hunt smaller animals such as rabbits and rodents. The Asiatic Wolf is also known for its keen sense of smell, which it uses to track its prey over long distances.

**American Wolves.**

The American Wolves, as described by Dr. Richardson, are distinct from the European Wolf in several respects. They are larger in size, with a more robust build, and have a typically grey or brown coat, often with a white collar. The tail is bushy and relatively short, and the ears are large and pointed. The American Wolves are found in various parts of North America, including the forests of the eastern United States and the grasslands of the western United States.

Dr. Richardson notes that the American Wolves are more aggressive than their European counterparts and are not as easily tamed. They are often considered to be a more solitary species, although some evidence suggests that they may form loose packs under certain circumstances. The American Wolves are known for their strength and agility, and they are skilled hunters of larger game such as elk and bison. They are also known to be effective scavengers, feeding on the remains of larger animals that have died of natural causes.
would be unable to preserve the game they kill from the wolves, if the latter were not as fearful as they are rapacious. The simple precaution of tying a handkerchief to a branch, and blowing up a horn, or making a loud noise by striking a stick against a large bough, in the wind, is sufficient to keep herds of wolves at a distance. At times however he says that they are impelled by hunger to be more venturous, and that they have been known to steal provisions from a settler at night, and to come under a traveller's bivouac and carry off some of his dogs. 'During our residence at Cumberland House in 1820,' continues Dr. Richardson, 'a wolf, which had been prowling round the fort, and was wounded by a settler, returned at a later hour of the day, whilst the blood was still flowing from its wound, and carried off a dog from amongst fifty others, that howled piteously, but had not courage to unite in an attack on their enemy. I was told of a poor Indian woman who was strangled by a wolf during the attack, was hastening to her assistance; but this was the only instance of their attacking human life, that came to my knowledge. As the winter advances and the snow becomes deep, the wolves are no longer able to hunt with success, suffer from hunger, and in severe seasons many die. In the spring of 1826 a large grey wolf was driven by hunger to prowl amongst the Indian huts which were erected in the immediate vicinity of Fort Franklin, and which the Indians considered had not been successful. It was found a few days afterwards lying dead on the snow near the fort. Its extreme emaciation and the emptiness of its intestines showed clearly that it died from inanition.'

We learn from the same excellent authority that the American Wolf builds its winter's lodge, not in a hollow in the earth, but in a cave, or in the ground; or it may be a large empty log, or even a fallen tree, or 

very common throughout the northern regions, but more or less abundant in different districts. 'Their foot-marks,' says Dr. Richardson, 'may be seen by the side of every stream, and a traveller can rarely pass a mile without crossing a wolf-track, or seeing the marks of their claw around him. They are very numerous on the sandy plains which, lying to the eastward of the Rocky Mountains, extend from the sources of the Peace and Saskatchewan rivers towards the Missourie. There bands of these animals feed on the game of the Indians, and prey upon the sick and straggling calves. They do not, under ordinary circumstances, venture to attack the well-grown animals; for the hunters informed me that they often see wolves walking through a herd of bulls without taking it. 'It sometimes, says he, meets a herd of wolves for the dogs of a party of Indians; and the howl of the animals of both species is prolonged so exactly in the same key, that even the practised ear of an Indian fails at times to discriminate them.'

The habits of the wolves of Melville Peninsula and the mode of capturing them by the Esquimaux are well described by Captain Lyon. Their boldness and ferocity must have been great. A fine dog,' says Captain Lyon, 'had just been purchased by a Mr. Elder, who was near to the spot, saw five wolves rush at, and attack it in an incredibly short space of time; before he could reach the place the carcass was torn in pieces, and he found only the lower part of one leg. The boldness of the wolves was altogether astonishing, as they were almost constantly seen amongst the hummocks, or lying quietly at no great distance in wait for dogs. From all we observed I have no reason to suppose that they would attack a single unarmed man, both English and Esquimaux frequently passing them without a stick in their hands; the animals however exhibited no symptoms of fear, but rather a kind of tacit agreement not to be the beginning quarrel, even though they might have been certain of proving victorious.'

Again, Captain Lyon thus notices their increased hardiness:—'The wolves had now grown so bold as to come alongside, and on the musk-ox houses, and the Esquimaux seldom did not couple of newly purchased Esquimaux dogs were confined, and carried them off, but not without some difficulty, for in the day-light we found even the ceiling of the hut sprinkled with blood and broken bones. One was given, but could not be allowed to go on the wolf as was laid and killed. It proved to be a female, which counted, Dr. Richardson remarks, for the sloughed wolves of not having been molested. Dr. Richardson further states that the buffalo-hunters P. C., No. 1749.
Esquimaux wolf-trap. It is made of strong slabs of ice, long and narrow, so that a fox can with difficulty turn himself in it, but a wolf must actually remain in the position in which he is taken. The door is a heavy portcullis of ice, sliding in two well-securued grooves of the same substance, and is kept up by a line which, passing over the top of the trap, is carried through a hole at the furthest extremity: to the end of the line is fastened a small hoop of whalebone, and to this any kind of flesh-bait is attached. From the slab which terminates the trap, a projection of ice, or a peg of wood or bone, points inward near the bottom, and under this the hoop is lightly hooked; the slightest pull at the bait liberates it, the door falls in an instant, and the wolf is speared where he lies.

The following varieties of North American Wolf are enumerated by Dr. Richardson:—
Variety A. Common Grey Wolf, Lupus griseus, the Makuygan of the Cree Indians, and the Amoral of the Equinamux.
Variety C. The Red Wolf, Lupus sictice.
Variety D. The Dusty Wolf, Lupus nubiles, Canis nubilus of Say.

The Dusty Wolf.

The Black American Wolf, Lupus ater, Canis lyopeus of Harlan.
The Prairie Wolf, Canis latrans of Say, Lyciscus latrans of Smith.

The animals which are thus distinguished have been long known, as Dr. Richardson remarks, to voyagers on the Missouri and Saskatchewan, as distinct from the Common Wolf. They are the Small Wolves of De Prez; the Prairie Wolf of Gass; the Prairie Wolf and Burrowing Dog of Lewis and Clark, and of Schoolcraft; the Cased Wolves of the Hudson's Bay Company's lists; and the Melouch-choggoneesh of the Cree Indians.

Geographical Distribution, Habit, &c.—Dr. Richardson states that the northern range of the Prairie Wolf is about the fifty-fifth degree of latitude, and that it probably extends southwards to Mexico. It associates, according to him, in greater numbers than the Grey Wolf of the same district; it hunts in packs, and brings forth its young in burrows on the open plain remote from the woods. Dr. Richardson further relates that on the banks of the Saskatchewan these animals start from the earth in vast numbers, upon hearing the report of a gun, and gather round the hunter expectant of the offal of the animal which he has slain. They are much more fleet than the Common Wolves. Dr. Richardson was informed by an experienced hunter who had resided for forty years on the Saskatchewan, that the only animal on the plain which he could not overtake, when mounted on a good horse, was the Prarie-homed Antelope, and that the Prairie Wolf was the next in speed. The Coyotl or Vulpes Idiens of Hernandez (Hist. Quadr. Novae Hisp., c. xiii.) appears to be the Coyote of the Mexican Spaniards, and is, 'most probably,' the Lyciscus cagottis of Smith. This appears to be the animal mentioned by Mr. Bullock; in his 'Six Months in Mexico,' 'Near Rio Pico,' says that traveller and assiduous collector, 'we shot several handsome birds, and saw a cajottie or wild dog, which in size nearly approached the wolf. He stood looking at us at a distance from the road, and it was not till a gun was fired at him that he deliberately moved off.'

With regard to this encounter, Col. Smith says that Mr. Bullock confirms the words of the Cappota, a very fierce kind of wolf, and that the individuals Mr. Bullock saw were in size equal to a bound, of a bushy rustic-grey, with buff-coloured limbs, and rather a scanty brush. This description, Colonel Smith adds, may coincide with a similar animal, which had not on the north-east coast of South America, only the tail was dark blue, with a white tip, and the under parts and feet were white. The Indians named it Aguaro, a name, Colonel Smith observes, applied to several species.

'This animal,' says Colonel Smith, 'measured about twenty-four inches at the shoulder, resembled a common wolf, but had a muzzle and the ears proportionally shorter; the body appeared to be rather long and more compared with the height; the ears, to the carpus and tarsus, were buff; the forehead, and back, clear grey; all the hair rather had a touch; the rest as before stated. In the 'Animal dom,' Baron Cuvier describes as a wolf, under the name of 'of Téxus,' one that is not a species; and we have little doubt but that the Coyotl, of Captain Beucherie, observed by him the banks of the Sacramento River, in California, 37° 43' north, and 122° west, is again the same animal, without adding that the coyote, or coyote, is given to it seems to imply a smaller species.'

Hernandez describes the Coyotl to be an unknown to the Old World, with a wolf's head, large, and pallid eyes, small and sharp ears, a long and not thick muzzle, numerous long white, or black claws, a very rough and thick tail, a nimous bite, proaching in form to the Fox, to which genus it is to be referred, and intermediate between it and in size; for it is twice the size of the fox and long, whereas it is said to attack and kill not only and similar animals, but stags, and sometimes even men. It is covered with brown and white long hair, is in hunting and vulpine in its manners, and so prone an arrow of wrongs, and so prompt to its prey, that it will recognize the robber after many hours will follow him, and sometimes set upon with its own kind, &c. It is however graceful to its beauty. It lives in many places of New Spain, and exposes those traits of character which are colder. It feeds upon the deer, hog, maize and other frumentaceous vegetables, and cane.

The Aguaro Guazu of D'Azara is the Canis jubatus, Cuvier, the Leop rouge of the French, the Pecos, of The Prince de Paulitra; the Prarie Wolf, and the Mexicano, of Smith.

The Canis jubatus, of Smith, of D'Azara thus describes this Red Wolf, to which Payaguas Indians give the name of Pataungu, and Chilian of that of Culpen. In Mexico, he says, the goes by the appellation of Orconomus. It is known by the name of a species, which it appears to have in common with the Coyote, or Cojut, which is said to be the same.

Length of an adult male exactly five feet, that of a tail nineteen inches, the hairs being four inches long. Height in front two feet ten and a half inches, and two feet eleven inches; circumference close to the feet wanting half an inch of feet, of the middle neck a foot, and of the head, before the ears, one and a half. The ears six inches high, in their part four, erect, but not exactly sharp, and very thick. From the roots of the ears to the tip, it begins to shrink, when it comes to the inner angle of the ear five inches; whiskers two inches and a half long, and black, upper jaw projecting an inch; the canine teeth are long, although they were very much worn, and scarce in numbers; the ears are the almost equal thickness to the tip. Under the great white spot; long hair within the ear and half tail of white also. Fore and hind feet to the lower jaw from the crown of the head, extremity of upper jaw black: rest of the ear yellowish-red. Mano. commencing at the aspect of continuing erect till beyond the shoulder, five inches, three-fourths long, and in the first half of the body, ten inches, black in the remainder towards the tip. Hair all over the body, including the belly, except the lower part.
D'Azara observes that it is either completely flattened or very rough, and would make very good carpets. Hair of the tail rather bushy and of the same length as on the body.

D'Azara adds—"At different times, which were identical, the smallest towards the end of September, which appeared to him to have been helped at the end of July or the beginning of August. D'Azara's friend Noseda caught another about two months after this, of the same colour, and made somewhat like a greyhound, but more robust; their aspect is mild, and their disposition gentle and peaceable: their strength is so great, that in combat the mastiff or bull-dog is far from being equal to them. They mostly seize their antagonists by the back, which gives them, which their great size generally enables them to do with ease."

The author of the 'Sportsman's Cabinet' (1804) remarks that the Irish greyhound is so rarely to be seen, that it is a matter of doubt whether one of the pure and unmixed breed is to be found even in the most remote part of the country from whence they are supposed to have derived their name. It is affirmed, he adds, by the best and most respected authorities, that the Danish dog, the Irish greyhound, and the Common greyhound of this country, though they appear so different, are but one and the same race of dog.

Next to this in size and strength Bewick places the Scottish Highland greyhound or wolf-dog, used by the Highlanders in their parleys. He states—"The Wolf-dog, a favourite sport of the noble, is fitly managed in parleys. Walter Scott's 'Maida' appears to have been a noble modern example. This is probably the race to which Beothius alludes as 'genus venaticum cum celeritatem tum audaciam simum,' praising its boldness not only in attacking wild beasts, but the wolves of the chase.

Colonel Hamilton Smith, speaking of the Irish greyhound, 'C. Hibernicus,' remarks (1840) that this antique race was originally, we may presume, the same as the Scottish; and, according to some opinions, was not found in Ireland in its great number and perfection until the thirteenth century, when the Normans began to infest the coasts. After observing that no such race is recorded to have existed antelently in Scandinavia or Denmark, and that its earliest colour was buff or pale yellow, in that respect also approximating the breeds of the East, and that the mystical bitch in Dantal's lore appears to refer to this species, both in Britain and Ireland, he expresses an opinion that the ancient race, like the Scottish, may have been crossed with the greyhound by the Normans. This curious circumstance, may have increased to the great stature since so much admired.

'Of the specimens we have seen,' says Col. Smith, 'and the figures published, no two appear now exactly alike in the structure or colour of the head. The greyhound may also be said to have been crossed with the antient species; and from this circumstance, no doubt, arises the difference in qualities ascribed to them. Still this dog, as large in Western Europe, and the extinction of the wolves in Ireland may, in part at least, be justly due to its exertions. The bitch kept by Buffon killed the male wolf she was bred up with, which proves that one was more than a match for that fierce animal. Lord Alazon is said to have kept the last dogs of this race, and it was one of his that Mr. Lambert describes in the 'Linnean Transactions.' But we heard that Lord O'Neill likewise had some; and, still later, that Mr. Hamilton Rowan used often to appear in Dublin with a couple of these majestic beasts."

WOLF, HIERONYMUS, a German scholar of the sixteenth century, was born on the 13th of August, 1516, at Deltingen, and belonged to a noble but reduced family. From his early youth, he aspired to be a churchman, but his father, whose means were very limited, and who also thought the delicate constitution of his son unsuited for a studious life, tried to dissuade him from it. His son at last gave way, and resolved to study law; but his early studies in this way again changed his determination, and he accordingly went to the university of Tübingen, where he became a pupil of Camerarius and J. Scheeg. As his father could not supply him with money, he was obliged to borrow books from friends, and sometimes from one of the professors. He was however soon tired of this situation, and went to Würzburg.
where he got a place as clerk in the bishop's office. Here too he did not remain long. He resigned his post and went to Wittenberg, where he attended the lectures of Melanchthon and others. He began to translate some Greek authors into Latin, which was his favourite occupation. In 1539 he went from Wittenberg to Nürnberg, where he acted for a time as assistant-master in a public school. There he was recommended to the gymnasium at Mühlhausen, on the recommendation of Melanchthon: but his restless disposition did not allow him to remain there more than two years; he resigned his office and returned to Nürnberg. After having stayed there for some time among which he made himself very familiar with private lessons, he went to Strassburg. The next few years he spent partly at Strassburg and partly at Basle, being all the while zealously engaged in preparing his editions of Isocrates, Demosthenes, and Aeschines. From Strassburg he went to Paris, and after a short stay there he returned to Basle. He now took his degree of Master of Arts, and then went to Augsburg, where he at length found a resting-place. Anton Fugger received him into his house, made him his librarian, and employed him in carrying on his Latin correspondence. After having been in this situation for six years, from 1551 to 1557, he was appointed professor of Greek in the gymnasium of Augsburg. Soon after, he was appointed to the rectorship of the gymnasium, and obtained in addition to it the office of librarian of the public library of the city of Augsburg. These offices he held until his death, on the 8th of October, 1559.

Hieronymus Wolf was a man of very extensive learning, and was particularly distinguished for his knowledge of Greek, which he is said to have written with greater facility than Latin. Some of his works have Greek prefaces, which show that he possessed a perfect knowledge of Greek. His Latin translations from the Greek are more faithful and correct than elegant. He was a man of a very discontented disposition, and was often in a state of melancholy. He had scarcely any friend, and was never married. He was fond of astrological speculations. Among his editions and translations of Greek writers the following are the most remarkable: 1. An edition of Nicephorus Gregoras, with a Latin translation and notes, Basle, 1552, fol.; 2. An abridged edition of Suidas, with a Latin translation, Basle, 1561, fol.; 3. An edition of Demetrius Phalerus, with a Latin translation, the commentary of Ulpian, Greek scholia, various readings and notes, Basle, 1572, fol.; 4. A very good edition of all the works of Isocrates, with a Latin translation and notes, Basle, 1563, fol. Among these three Athenian scholars the best is the among his editions of ancient authors; 5. An edition of Zonaras, with a Latin translation, for which he collated five MSS., Basle, 1557, fol.; 6. The first edition of Nicetas Acinnatus, with a Latin translation, Basle, 1556, fol. He also wrote several works on grammar, in which however are not of much value, and some original treatises, such as 'Dialogus de Usu Astrologiae,' and several others.

(From, Miscellanea Historiae Philosophicae, &c.; Jöcher, Allgemeine Gelehrten Lexicon; Fr. Passow, Vermischte Schriften, Leipzig, 1843, 8vo.)

WOLF, JOHANN CHRISTOPH, a learned Lutheran divine, was born on the 21st of February, 1563, at Wernigerode. His father was corps-chaplain. In 1566 the family removed to Harburg, where the father died three months after his arrival; but young Wolf found a friend in Johann Albert Fabricius, who received him into his house, allowed him the use of his extensive library, and also gave him the tuition of his studies. Thus, the young man availed himself of these opportunities, and before he had attained his twentieth year, and before he went to the University, he had not only read the most important among the ancient writers, but also the whole Commentary of Eusebius on the Old Testament, and many other books. He drew up a list of the authors mentioned in that commentary. This list is printed, with a few improvements, in Fabricius' 'Bibliotheca Graeca' (vol. i., p. 457-501). Subsequently he made a similar list of authors referred to in Ireneus, Tertullian, Origen, and Rhesus, which is likewise printed in Fabricius' 'Bibliotheca Graeca' (vol. iv., p. 279-286). Having obtained a scholarship, which enabled him to continue his studies, he went in 1576 to the University of Wittenberg.
Friedrich, a professional musician; and after he himself had given him all the theoretical and practical instruction he was capable of, he sent both sons to the learned organism Schröter, who also instructed them in mathematics, a science to which Friedrich August had an aversion throughout life. But Wolf's plan was inadvertent, for by chance Friedrich; for although Friedrich August was fond of music, sang and played several instruments, yet he regarded the art only as an elegant amusement, and was resolved to follow the course of study which he had commenced at Harz, and had adhered to the university of Göttingen to study philology exclusively. He always prized private study more than any other; and in consequence of this he was highly irregular in school. The learned professors of Göttingen fully observed this inclination in Wolf, and on one occasion, when Heyne was going to lecture on Pindar, and Wolf wanted to enter his name as one of his hearers, Heyne refused to admit him. From this moment Wolf avoided Heyne, and did not even attempt to become a member of the philosophic seminary, though in a financial point of view it would have been a material assistance to him. But Wolf nevertheless lived happy and retired at Göttingen, and he made up the deficiencies in his finances by giving private lessons to other students. Being invited to the Harz Mountains, he fact, that in order to have an English book which he might read with his pupils, he published, in 1778, an edition of Shakspere's 'Macbeth,' with explanatory notes. Heyne was one of the men of paramount influence in all scholastic matters at Göttingen; and Wolf, having been presented to him a dissertation on Homer, in which he explained some points on which he ventured to differ from Heyne; but Heyne peremptorily refused to read it.

In 1779 Wolf left Göttingen, and was immediately after appointed teacher in the paedagogium at Ilfeld. Here he made himself first known to scholars by his edition of Plato's 'Symposium' (Leipzig, 1782, 8vo. ; a second edition appearing in 1784, with a learned work on the production of German. The manner in which Wolf treated his author met with general approbation, and attracted the attention of the Prussian minister, Baron von Zedlitz. In consequence of this publication Wolf was appointed, in 1782, reader of the public school at the foot of the Harz mountains. In the year following he received two invitations, one to the office of rector of the gymnasium at Gera, and the other to that of ordinary professor of philosophy in the university of Halle, and rector of the paedagogium, at Copenhagen, and Zedlitz, the friend of his own. This edict contained also the following of the 'Monumentum Ancyranum,' and of the 'Fasti Praenestini.' 3. A collection of his sma...
commanded the sea and Amherst the land forces. The brunt of the French fire in landing before Louisbourg was borne by Wolfe. It was characteristic of Wolfe that he went to the front in the heat of the action, telling his officers to take care of centre and right divisions being mere fees to distract the enemy. The after operations of the siege were also in a great measure conducted by Wolfe; and it was an honourable trait in the character of Amherst that, in his dispatches, he allowed his brigadier the full credit of all the actions. The landing was effected on the 6th of June: Louisbourg surrendered on the 26th of July. Wolfe soon afterwards returned to England.

In 1759 Wolfe was sent out against Quebec by Pitt, who had resolved to deprive the French crown of its most important settlements in America. The command of the sea-forces was intrusted to Saunders; the command of the land-forces (7700 men, including provincials) was given to Wolfe. The embarkation arrived at the Isle of Orleans on the 26th of June: the fort of Niagara had been submitted to the English under Amherst the day before. In August Wolfe issued a proclamation to the Canadian peasants, informing them that his forces were masters of the river, while a powerful squadron under General Amherst threatened their country from the interior, calling upon them to observe a strict neutrality during the struggle between the French and English crowns, and promising to protect them in their possessions and the exercise of their religion. Wolfe had time to reconnoitre and to reorganise the troops which he had in the province in Quebec, which he had fortified in a masterly manner. The months of July and August were spent in repeated unsuccessful attempts to force the enemy to battle. The Canadians, who had no reason to doubt Wolfe's determination to carry their works, began to repair the breaches, which prevented them from advancing. Wolfe, with his usual prudence, waited for the enemy to come to him.

The feature of Wolfe's character most dwelt upon by his contemporaries was his ability and skill as an engineer of enterprise. His skill as a disciplinarian however, the pains he took to ascertain the real state of affairs at Rochfort, led the arguments by which he supported the proposal of a descent, and, above all, his letter addressed to the King on the 19th June, his head-quarters having been on the 2nd of September, show that this quality was combined with an observant and deliberate mind. Enterprise was with Wolfe the result of perfect and laboriously attained knowledge, without which the latter would be but a name.

It is to be regretted that the correspondence of Wolfe which is known to exist has not been given to the world. It would be instructive to the military men, for his character as a soldier was almost perfect, though the field in which his talents were developed was a narrow one. The task was undertaken by Porty and afterwards by Gieg; but relinquished by both from unexplained difficulties which intervened. Michaud, Jeune, is in error when he says, in the 'Biographie Universelle,' that Life and his son of the 18th century, had been the work of a secret correspondent in 1827; it was only announced. The author of the article 'Wolfe, James,' in the 'Encyclopædia Americana,' has without restraint and in the best manner, copied Michaud's sketch, and the task is at an end. The only materials for the Life of Wolfe contained in the 'Annual Register,' edited by Burke; in a very slender 'Life of General James Wolfe,' attempted according to the rules of eloquence,' by a writer who designates himself 'J. P.' in the 'Military Miscellany.'

The death of Wolfe made a deep impression in England. The most touching instance is mentioned by Burke:—A little circumstance was talked of at that time, and it deserves to be recorded, as it shows a fairness of character and a justness of thought in the heart of people that is rarely met with, even amongst persons of education. The mother of General Wolfe was an object marked out for pity by great and peculiar distress; the public would pierce her mind with a peculiar affliction, who had exp...
enced the dutiful son, the amiable domestic character, while the world admired the accomplished officer. Within a few months she had lost her husband; she now lost her son, her only child. The populace of the village where she lived unanimously agreed to admit no illuminations or fireworks, or any other sign of rejoicing whatsoever near her door. It was recommended, by all her friends, she should not be allowed to sue out over her grief. There was a justness in this, and whoever knows the people that made no small sacrifice on this occasion.'

James Wolfe fell in his thirty-fourth year. His remains were deposited in the Old Burial ground at Edinburgh, and were erected to his memory, in 1769, by the gentlemen of his native parish: a public monument in Westminster Abbey was voted by the House of Commons in 1759, and opened to the public in 1773; a marble statue was voted by the Academy of Athens for the public college at Bordeaux; a small statue and a tomb were voted for the poet, in the Pantheon, Paris; a large tapestry was ordered for the Church of Scotland, Edinburgh; a gold medal and a copy of the 'Lexicon' was given; a 12mo volume entitled 'College Recollections,' published at London in the same year with Archbishop Wharton's work, but we believe, some months before it. The 'Remains' (filling 368 pp.) consist principally of Fifteen Sermons, an appendix of miscellaneous thoughts and other fragments, and some juvenile poems, some letters, and other compositions inserted in the Memoir, which, including these, occupies nearly half the volume. Wolfe's literary reputation rests on his famous ode entitled 'The Burial of Sir John Moore,' which he composed in 1817, on reading Southey's prose narrative in the 'Edinburgh Review,' and which first appeared soon after with his initials, though without his knowledge, in the 'Newry Telegraph,' from which it was immediately copied into the London papers, and from those of Dublin. The poem, which in the pathos of a noble simplicity has rarely been surpassed, drew much attention from the first; but its authorship remained unknown, except to a small circle of Wolfe's friends or associates, until the question came to be publicly discussed in consequence of a high encomium stated in Captain Medwin's 'Conversations of Byron,' published in 1824, to have been passed upon it by his lordship. The lines were attributed to various writers; and claimants to the honour of having produced them have started up from time to time, some even within the last few years. But the whole of these attempts to defraud the true author of his rights have been persistently refused.*

There are some lines of Wolfe's written to the popular Irish air 'Granmarche,' which in their kind are little inferior in merit to those on the burial of Moore.

WOLENBOTTEL is one of the six circles of the duchy of Brunswick, containing 18,000 families, and 50,000 inhabitants. Wollenbottel, the capital, is situated in 52° 9' N. lat. and 10° 32' E. long., in a low marshy spot on the banks of the river Ocker, which flows through the city. It was formerly well fortified, but the works having fallen into decay are now restored. The city has been converted into public walks. It is divided into three parts, viz. the citadel, or formerly fortified part, and two suburbs, containing altogether about 10,000 inhabitants.

The town is, the whole, without business, the most part, straight streets, all well paved. Till 1744 it was the residence of the dukes, in whose palace there was a manufactory of tapestry and a theatre. Opposite the palace stands the fine building erected by Duke Augustus in 1723, the model of the Painted Hall at St. Alban's, and the first example of the ground-floor the Ducal Riding-school, and above it the celebrated library, which was rendered still more famous by the 'Wollenbottel Fragments' published by its librarian, the learned G. B. Lessing, to whom a monument is erected. This library is probably the earliest impressions and 10,000 MS. It seems that no good catalogue has been made, for some accounts say that it consists of 270,000 volumes, others of 200,000, while others again reduce it to 140,000; among them there is a large collection of Bibles, and a representation of St. Mary which that of St. Mary is remarkable for its size; an ancient arsenal, now used as barracks; a large poor-house; an orphan asylum; a good gymnasium; and several schools. The inhabitants have a considerable trade in yarn, and they also manufacture linen, leather gloves, japanned wares, paper-hangings, silk, diaper, tobacco, liquors, and vitriol; there are likewise some taverns and distilleries. Wollenbottel is the seat of several public offices, for the whole duchy, of the consistory court, of the bishop of Wolfenburck, and of the bishop of Waldeck, Lippe, and Brunswick. The pretty country seat Antoinesenhuizen, having fallen into decay, has been pulled down. Near the town are the two villages Ober and Niederstalak, where the beautiful ducal palace of Salzthum, formerly stood. It is in the park of which a fine gallery of paintings which it contained (sixty of the most valuable of which were carried away by the French in 1806, but restored, we presume, in 1815) has been assigned to Brunswick, where it depicts the whole American war, together with the titles of squablers and other works of art.

(Brockhaus, Conversations Lexicon; Hassel, Handbuch der Geographie, vol. 1, Leipzig, Handbuch, by Hörschelmann; Cannabich, Lehrbuch der elektrischen Wissenschaften.)

WOLFF, JOHANN CHRISTIAN VON, a celebrated German mathematician and philosopher, was born at Breslau, January 24, 1679, and at an early age showed a taste for the acquisition of knowledge. His father, who was a
brewed, strongly encouraged him in this disposition; he became his first preceptor, and, having instructed him in the Latin language, he sent him to the public school of the town, in order that he might have the benefit of the best masters which it afforded. The youth there studied diligently the philosophy of the age, and he acquired such a facility in the progress of the learning that he is said to have become the rival of his tutors; but before he was twenty years of age, having obtained information of the revolution which the writings of Descartes had begun to produce in the schools, he was actuated by a strong desire to be initiated with them; and application to the Cartesian philosophy was a determination to cultivate mathematical science for the purpose of founding on its principles a system of metaphysics. With this object he passed through a course of mathematics at the University of Jena, and he afterwards went to Leipzig, where he resided during three or four years. Here, in 1703, he began to deliver lectures; and in the same year he published two tracts, one entitled 'De Rotis Dentalis,' and the other 'De Algorismos Infinitesimali Differentiali.' The ability displayed in these dissertations procured for Wolff the esteem and friendship of the learned men of his country; he became intimate with Tschirnhausen and Leibnitz, and by them he was encouraged in his enterprise to pass to Germany, a national philosophy which might replace that of Aristotle as then understood. He at first intended to enter the church as a profession, but he was finally induced to seek an appointment in fulfilling the duties of which he might continually advance his knowledge, and to seek such positions as were a candidate for a professor's chair, and in 1707 he was appointed to give instruction in pure and mixed mathematics in the University of Halle. It was while he held this post that he published, entitled 'De Mechanico Mathematico et philosophico' and his 'Elementa Matheseos Universae,' of which last work an enlarged edition was published at Geneva between the years 1720 and 1741, in five volumes, 4to. The first volume contains the following subjects:— 'Commentationes de Arithmetica, Algebra, Geometria, Trigonometria plana et sphaerica.' The second, 'Mechanica cum Statica; Hydrostatica, &c.' the third, 'Optica; Perspectiva atque Astronomia.' the fourth, 'Geographia; Chronologia; Gnomonica; Pyrotechnia et Architectura.' and this fifth, 'Commentationes de Prinicipiis Scriptorum Mathematicorum.' &c. He also published at Leipzig and Frankfort, in 1728, 'Tabulae Sinuum atque Tangentium tarn naturalium quam artificialium, una cum Logarithmis numerorum vulgarium, &c.' Being a member of the Philosophical Society of Geneva, and in 1718, he was appointed to a chair of mathematics and physics, which were inserted in the 'Acta Eruditorum,' and in 1710 he was elected a Fellow of the Royal Society of London.

In 1712 and 1713, Wolff was almost exclusively devoted to the study of metaphysical and moral philosophy; and between the years 1712 and 1723 he wrote his 'Thoughts on the Powers of the Human Mind;' on the Deity and the Universe; on the Operations of Nature; and on the Search after Happiness; and, as a sequel to the last, 'Thoughts on Society as a means of advancing Human Happiness.' These works were published separately in the German language, a medium till then unemployed in treating such subjects, but the circumstance produced the best effects by providing a medium of communication between those who are devoted to mathematics and physics, and those who are interested in the advancement of knowledge. In 1725, however, he was invited back to Halle; and, in 1733, appointed a professor in the University of Brunswick; and in 1737, he was elected a member of the National Academy of Sciences at Paris.

On his return to Halle he was made privy-councilor, vice-chancellor, and professor of international law; the king afterwards made him Chancellor of the University, and sent him to Brazil as a representative of the Empire; and at the conclusion of his mission, the inestimable investigations which he made in the hands of all the German students, his oral instruction were no longer necessary. Being attacked by the gout in the stomach, he died, having borne his sufferings with fortitude and Christian piety, April 9, 1744, in the 76th year of his age.

The merit of Wolff consisted in a correct and methodical arrangement of the subjects of philosophical science, rather than in discovery. He borrowed freely from his immediate predecessors, Descartes and Leibnitz, and even from the writings of the Stoics. He employed the methods of mathematics to precise methods which are employed in philosophy, he appears to have overlooked the want of homogeneity in the elements of the former branch of science, which renders it one of the most abstract reasonings. In stating a philosophical proposition which is perhaps self-evident, he often exhibits a tedious demonstration in order that he may show its dependence on some more general theorem which precedes it; and these demonstrations are remarkable for their extraordinary pedantry.

Wolff divides human knowledge into three parts, historical, philosophical, and mathematical: in the first he includes everything relating to material as well as intellectual being, that is, whatever is cognizable by the senses.
or by internal conviction. The second he considers as comprehending the reasons of things; and he states its object to be the explanation of the reason that what is possible may be realized. His third division constitutes the knowledge of quantity. He divides psychology into two kinds, which are designated rational and empirical, and the former is distinguished from the latter as the science of things possible relatively to the soul only. He defines science in general, the faculty of demonstrating.

WOLFF, PIUS ALEXANDER, one of the most distinguished German actors of the present century, was born in 1704. He belongs to the line of the learned professions, but his own inclination, as well as his natural talents, led him to the stage. In 1804 he was one of the actors engaged at Weimar, the theatre of which place was then regarded as the model for all German theatres. Schiller and Goethe were themselves actively engaged in conducting the theatre and training the actors. As Wolff was a man of much greater talent than the majority of actors, Goethe took especial trouble with him, trained him on sound artistic principles, and afterwards declared that Wolff had become an actor quite to his mind. Wolff devoted himself especially to the performance of tragic characters and youthful heroes, which he acted to perfection. His performance of Hamlet, the Marquis Posa, Max. Piccolomini, Weislingen, Orestes, and Tasso, made such an impression in Germany, that to this day he is considered the most perfect actor of which other actors are measured. At a later period he occasionally also acted comic and harmonious characters, in which he was much admired, though tragedy was at all times his peculiar field, in which he was unsurpassed. In 1816 he became a member of the royal theatre of Berlin.

He died at Weimar in 1828. During the latter years of his life he wrote several dramas, which were well received, and some of which are still favourite plays in Germany. Three of them, 'Caesar,' a comedy, 'Dicht im Pflicht,' and 'Preciosa,' form a separate collection which he published under the title 'Dramatische Spiele,' Berlin, 1823, but the collection was not continued, and his other plays appeared separately at different times. 'Preciosa' has become celebrated by being taken by C. M. von Weber for one of his most popular operas. His other plays are—'Der Hund des Aubri,' a farce, (Berlin, 1822); 'Der Mann von fünfzig Jahren' (Berlin, 1830); 'Treue siegt in Liebenesetern,' and 'Der Kamerdiener' (Berlin, 1838).

(Gervinus, Neuere Geschichte der Poet. National-Literatur der Deutschen, ii, p. 559; Brockhaus, Conversations-Lexicon.)

WOLFRAM VON ESCHENBACH, a Minnesänger, who lived in the first part of the thirteenth century, is considered the best German poet of his time. He was probably born at a castle called Eschenbach, which seems to have been situated in the Upper Palatinate, and he was descended from a noble family. After having been a knight, he retired to the monastery of St. Sebald, where the emperor received him with equal satisfaction in their camp and at their court. He was present at the famous poetical festival on the Wartburg. Towards the end of his life he retired to his native country: he died in 1220.

Wolfram von Eschenbach is the author of the 'Parzival.' Of his numerous productions the greater part however are lost, but his principal poem has most luckily been preserved in MS. at St. Gallen and at some other places. The poem is entitled to the title of one of the most beautiful of French and Provençal models—the holy Grail being the marvellous object which the hero of the poem, Parzival, pursues in a long course of adventures. He at last becomes king of the Grail, and thus enjoys the parest happiness which man can enjoy. There is an episcopal tendency in the poem, but it would be incorrect to call it an epic; full of deep thoughts on the destiny of man, on the mysterious nature of his soul, on his religious and moral duties, it belongs to a class of poems which are rare in the literature of the world, and of which the 'Parzival' may be considered as the most striking specimen. The 'Parzival' was written about 1205. It was first printed in 1477, fol., in an incorrect and mutilated edition, which was reprinted and somewhat corrected in the first volume of 'Sammlung Alldiotter Gedichte,' by Müller, who collated the MS. of St. Gallen. The other extant works of Wolfram von Eschenbach are, 2, 'Tituler,' first printed in 1477, 4to, a fragment of an introductory poem to Parzival, and in Gervinus's opinion the finest specimen of ancient German poetry, which must not be confounded with another poem, likewise called 'Tituler,' which was once incorrectly attributed to Wolfram; 3, 'Willehalm von Orange' (William of Orange), in Manesse's collection of Minnesingers. The place there are also added, and the author of the poem is unknown. An excellent critical edition of all the extant productions of Wolfram von Eschenbach was published by Lachmann, Berlin, 1833, 8vo, who has added a valuable introduction to the Life and Works of the author. Wolfram, however, a considerable writer, was not the greatest. In his style is simple, clear, and elegant, and the difficulties which exist are rather due to the mystical tendency of the author and his transcendental ideas, than to a want of those qualities which constitute a great poet.

WOLFRAM. [TURGENJ.]
attained any degree of excellence in painting, and he has the additional honour of having been the master of Albert Dürer. Wolgemuth's wood-cuts are the oldest prints of that class in Germany of which the artist is known, and they are extremely scarce. Wolgemuth's paintings are likewise scarce; there are two in the Augustinian church at Nürnberg, another in Our Lady's chapel, and a Last Judgment in the town-house of the same place; and one in the church of Schwabach for which he was paid, in 1507, 80 florins. For that period a very great sum; some years after this the celebrated Amberger charged the emperor Charles V. for his portrait only 35 florins. There is also a valuable work by him in the Imperial Gallery of Vienna, painted in 1511; another in the Louvre at Paris, and in the Pinakothek at Munich there are five pieces by Wolgemuth. He died in 1510, aged 85.

The king of Bavaria possesses a portrait of Wolgemuth, painted in 1516, in his 82nd year, by his pupil Albert Dürer; this is inserted upon the back of the picture.

Wolgemuth's style has the defects of the works of art of his age, especially in design; his works however are carefully finished, exhibit much expression, and in the draperies are superior to the works of many of the eminent German painters who succeeded him.

Wolgemuth and Pleydenwurff cut in wood the illustrations of a curious and celebrated old work in folio, known as the 'Nürnberg Chronicle' of Hartmann Schedel, a physician. It was published first in Latin, in 1493, eight years after the death of its author. His autograph is translated and engraved by a woman in the following year. The cuts consist of views of towns and portraits of eminent men. The Latin edition is the better; the title commencements—Liber Chronicarum per viam Epitomatis et Brevisarii compilatus, &c.

WOLKONSKIT. Amorphous. Structure compact, transparent, conchoidal, with a light greenish-blue to light emerald-green. streak bluish-green and shining. Opaque. Nearly dull. Specific gravity 2.2. It is so extremely fragile that it readily falls to pieces on a slight blow. It is found at Perm in Russia.

Analysis by M. Blenc.—

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WOLLASTON, WILLIAM, author of 'The Religion of Nature demonstrations' was bom at Staffordshire, on the 26th of March, 1669. He was descended from an old and considerable Staffordshire family, but belonged to a younger and a poor branch of it. 'When he was in the tenth year of his age, a Latin school was opened at Shenston in Staffordshire, where his father, a private gentleman of a small fortune, then resided; and Mr. Wollaston was immediately sent to the master of it for such instruction as he was capable of giving him, and continued near two years under his care. Afterwards he was sent to Lichfield school, in which a great deal of learning happened, and the magistrates of the city turned the master out of the schoolhouse. Many scholars followed the ejected master; and Mr. Wollaston amongst the rest. He remained with him till he quitted his school, which was before the death of Mr. Wollaston; and thence, the scholium being ended, he returned into the free-school, and continued there about a year. This was all the schooling Mr. Wollaston ever had.' (Clarke's Life of Wollaston, prefixed to his edition of the 'Religion of Nature,' 1793, p. iv.) On the 19th of June, 1724, he was entered a pensioner at Sidney Sussex College, Cambridge, where he resided almost without interruption until the 29th of September, 1681, by which time he had taken his Master of Arts' degree and deacon's orders. He was disappointed in not obtaining a fellowship in his college, for which he had laboured with great diligence, and in the hope of obtaining which he had submitted to much inconvenience from poverty during his residence in the university. On leaving college he took the situation of assistant-master at Birmingham school, and shortly after he joined the school he obtained a lectureship in a chapel two miles out of Birmingham. After having filled the situation of assistant-master for about four years, he was appointed second master of the school, which had three masters and two assistant-masters, and at the same time took priest's orders. This mastership was only the seventh year of his life. He determined to give assistance to two brothers who had got into difficulties. 'In the good offices which he did them at the time,' says the biographer who has been already quoted, 'he so far showed his affection for them as to perform the deed with a due regard to his own welfare, as he was then circumstances.'

In August 1888, the poor schoolmaster suddenly fell ill at the house of a friend, and died of a second for he was the head of his own branch of the Wollaston family. Mr. Wollaston of Shenton, in Leicestershire, who greatly to his own surprise made himself heir. This gentleman had lost before his death lost his only son, and not choosing to go his estate to his daughter and his nephew and father of the subject of this sketch. But a further acquaintance with his younger relative, and the high character which he heard of him, led him before his death to revoke this settlement and make another. His cousin Nicholas, a gentleman of Shenton, who had been to our author's behaviour, who little suspected any such matter. And his behaviour was found to be such that the stricter the observations were upon it, the more they turned to his advantage. In fine, Mr. Wollaston became a lord mayor of the city of Birmingham, or Nicholas Charlton, a citizen of London, who brought another accession of fortune. He now devoted his mind entirely to the enjoyment of domestic happiness and the pursuit of learning. 'He may truly be said to have been his bishop's benefit of 28h. a year. He seldom went out of it. He took no delight in unoccupied journeys, and for above thirty years before his death he had not been absent from his habitation in Charter House Square so much as one whole night.' (p. xiv.) His studies were principally devoted to the antient languages, theology, and embraced mathematics and natural philosophy, and the Arabic language. In 1690 he published a paraphrase of a part of the 'Book of Ecclesiastes,' and in 1691 he composed and printed, but only for private circulation, a small Latin grammar. This ''Grammar Deb'nt' was published in 1724, but a very short time before his death. A number of other works, which he had written during his four-and-thirty years' studious residence in London, were committed by him to the flames before his death. Some of his manuscripts were destroyed, but others found escape the same fate only by the being forgotten:—1, A Hebrew Grammar; 2, Lyons Arabic et Syriaca; 3, Specimen Vocabularium Biblii Hebræici, litteris nostrabilibus; 4, Linguarum Semiticarum, &c.; 7, Formulae quadam Germaniae; 6, De Generibus Pudum, Meteorum, Carminum, &c.; 8, Judentos, Graecos, et Latinos; 9, De Vocabulis Arabico et Tyroso, adTyriam: Cursus Linguae Arabicae spectante; 10, Miscellanea Philologica; 11, Opus posthumum, Antiquitates et Particularia in the History of Man, and (12), all that had been lost upon this Earth from Eternity, &c.; 12, Some Passages relating to the History of Christ, collected out of the Patriotic Fathers; 13, A Treatise relating to the Jews, their Antiquities, Language, &c.; Besides this there was a numerous collection of manuscripts which have not been burnt but have been preserved above this Earth from Eternity.'
sketches of what afterwards reconsidered and carried on much farther, and which soon after such revival he nevertheless committed to the flames, as being still, in his opinion, short of that perfection to which he desired and had intended to bring them. (p. xxiii.)

Wollaston died on the 29th of October, 1724, in his sixty-sixth year. The immediate cause of his death was a fracture of the arm, which happened when he was in a state of health. His wife had died four years before. He had lived most happily together thirty years, and she had borne him eleven children, of whom seven survived their father. He was buried by the side of his wife in the church of Great Finborough in Suffolk, where one of his estates lay, and where his eldest son afterwards resided.

'The Religion of Nature Delineated' is, as the name implies, an exposition of man's various moral duties and the principles of them, independently of revelation, and of so much as may be learnt without revelation of the divine government of the world. (pp. 1-12)

Wollaston's system of morals is that he refers all duties to truth as their fundamental principle, defining truth to be the expression of things as they are, and extending the definition by the remark that 'a true proposition may be denied, or things may be possible that are by deeds as well as by express words, or another proposition.' As an instance, theft would be interpreted by Wollaston as a denial of the true owner's property in the goods stolen. On this somewhat fanciful foundation the whole range of human duties is extended. Former reasons, however, being revealed, is religion, is built up by Wollaston with great ingenuity and skill. The work is not complete: the author sets out with proposing to himself three questions to be answered: 1. 'Is there any thing in God, and religion, proper to the true Christian?' 2. 'If there is, is it?' and 3. 'How may a man qualify himself, so as to be able to judge for himself, of the other religions professed in the world; to settle his own opinions in disputable matters; and to engage in controversies of the highest sort of mind, without disturbing others, nor being disturbed at what passes among them?' Only the first two of these three questions are answered. Wollaston had begun to answer the third question, but had made little progress, when death overtook him.

The work was very popular on its first publication; ten thousand copies of it, according to Dr. Clarke, having been sold in a very few years. The best edition is the seventh last, to which is prefixed the biographical sketches, by Dr. Clarke, of Wollaston's various discoveries, of his life and works, and which was edited by him at the request, as he states in an advertisement, of Caroline, the wife of George II.

WOLLASTON, WILLIAM HYDE, M.D., a distinguished cultivator of natural science, was born August 6th, 1766, at London, in the county of Middlesex. He was the son of William Wollaston, of Chiseldon, in Kent, who from his own observations made an extensive catalogue of the northern circum-polar stars, which, with an account of the instruments employed and tables for the reductions, was published under the name of the world. (pp. 103-105)

Having gone through the usual preparatory course of education, he was sent to Caius College, Cambridge, where he applied himself diligently to the studies immediately relating to the medical profession, for which he was intended, and took the degree of A.B. in 1786: in the same year he was elected a Fellow of the Royal Society, to whose Transactions, during his life, he contributed many papers of the highest importance, and in 1805 he was chosen one of its secretaries. He was also appointed one of the vice-presidents of the Geological Society.

Dr. Wollaston entered into practice as a physician, and for a time resided at Bury St. Edmunds: he afterwards removed to London, and it might have been supposed that the New Year's Humours, in 1789, injured his health, and his reputation; but either because his success was not equal to his expectations, or in consequence of the disappointment which he felt in not obtaining the post of physician to St. George's Hospital, Dr. Pemberton having been preferred to him, he determined to quit the profession, and devote himself wholly to the pursuit of natural philosophy.

The researches of men of science, however important they may have been to mankind, by the improvements to which they have led in arts and manufactures, have seldom been productive of immediate benefit to those who first conducted them: some more fortunate person, by seizing on an original idea already propounded, and bringing it to the level of a practical application, may acquire both fame and fortune; while the original discoverer has remained unnoticed, and perhaps even his name has been forgotten. This was not the fate of Dr. Wollaston, in whom were combined the genius of the philosopher and the skill of the artist; since from his different discoveries, and particularly from that of a method of manufacturing platinum, he is said to have acquired a considerable fortune. No one however could have better deserved the rewards due to genius and industry; for not only were this the quintessence of his work, but his application to philosophical investigations and experiments was unremitting: even when near his last moments, though suffering under a painful malady, he had the fortitude to dictate an account of his most recent discoveries, and of multiples, in a paper 'On Super-acid and Sub-acid Salts,' printed in the 'Philosophical Transactions' for the year 1808: he now showed the important practical application of which this new metallic alloy, and by connecting the scale of equivalents with Gunter's sliding rule, has put into the hands of the chemist an instrument of the most valuable and essential in its uses, and equally essential to the student, the adept, and the manufacturer.

Mr. Wollaston's most noted contribution to the 'Transactions of the Royal Society' was in June, 1797, being an essay 'On Gouty and Urinary Concretions,' in which he made known several new compounds connected with the production of those maladies, in addition to the urine combinations previously known: these were—ammonium-acid carbonate of lime; ammonium-magnesia phosphate, a mixture of the two forming the fusible calculus; oxalate of lime; and more lately he added cystic oxide to the list of his previous discoveries. (Phil. Trans., 1810.) In 1804 and following years a new metal tincture was described, containing the metals contained in the ore of platinum, and associated with osmium and iridium, discovered about the same time by Mr. Tennant. In 1809 he showed that the supposed new metal tantalum was identical with columbium, previously discovered by Dr. Humphry Davy. (Phil. Trans., 1809.) In 1810 he showed to the Royal Society the Bakerian lecture, in which he fully describes his ingenious method of rendering platinum malleable. (Manual of Chemistry, p. 108.)

His 'History of Chemistry' (vol. ii., p. 248) Dr. Thomson remarks:—Dr. Wollaston had a particular turn for contriving pieces of apparatus for scientific purposes. His reflective goniometer was a most valuable present to mineralogists, and it is by its means that crystallography has acquired the great degree of perfection which it has recently exhibited. He contrived a very simple apparatus for ascertaining the power of various bodies to refract light. His camera lucida furnished those who were ignorant of drawing with a convenient method of obtaining exact and parallel lines, those sitting out of his way.
of galvanism and common electricity; and the first explanation of the cause of the different phenomena exhibited by galvanism and common electricity.

Without entering further into an account of the various papers by Dr. Wollaston which appear in the 'Philosophical Transactions,' we shall conclude with the following general remarks on his scientific character, by a professed judge of its excellence, the late Dr. Henry. Dr. Wollaston,' he observes, 'was endowed with bodily senses of extraordinary acuteness and accuracy, and with great general vigour of understanding. Trained in the discipline of the experimental sciences, he had acquired a powerful command over his attention, and had habituated himself to the most rigid correctness, both in thought and language. He was sufficiently provided with the resources of mathematics to be enabled to pursue with success profound inquiries in mechanical and optical philosophy, the results of which enabled him to unfold the causes of phenomena not before understood, and to enrich the arts connected with those sciences by the invention of ingenious and valuable instruments. In chemistry he was distinguished by the extreme nicety and delicacy of his observations, by the quickness and precision with which he marked resemblances and discriminated differences, the sagacity with which he devised experiments and anticipated their results, and the skill with which he executed the analysis of the fragments of the results; so often so many of his experiments were cleared every step of his ascent a secure station, from which it was easy to rise to higher and more enlarged inductions.'

WOLSTONEONITE. TUBULAR SPAR. SILICATE OF LIME.


Lustre vitreous. Translucent. Transparent. Specific gravity 2.14. Amorphous. The commonest form of colurnbar crystals lying in all directions, or fibrous, the fibres being either parallel or divergent.

Before the blow-pipe on charcoal, the edges are melted into a semi-transparent colourless glass; but it requires a very great heat to fuse it perfectly; with which it readily melts in large quantity into a transparent glass.

It is found in very perfect crystals at Vesuvius, at Cape di Bove near Rome, in the Bannat, Ceylon, North America, Sweden, &c.

It has been imperfectly analysed, and from various places with but little difference in the results; No. 1 is the analysis of a specimen from Calklows in the Bannat, by Stromeyer, and No. 2 of a specimen from Parges in Sweden, by Bonsdorff.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>51-44</td>
<td>52-58</td>
</tr>
<tr>
<td>Lime</td>
<td>47-11</td>
<td>44-45</td>
</tr>
<tr>
<td>Magnesa</td>
<td>0-00</td>
<td>0-68</td>
</tr>
<tr>
<td>Oxid of iron</td>
<td>0-46</td>
<td>1-13</td>
</tr>
</tbody>
</table>

WOLLIN is an island at the mouth of the Oder, and forms part of the circle of Usedom and Wollin, in the province of Pomerania. It is situated in the mouth of the Frische Haff, the rivers Swine and Divenow, and the Baltic. It is nearly 100 square miles in extent, and the population is 6000. It is well wooded, and has good pastures. Pritzer, a village near the Swine, is celebrated for its hemp, which greatly improves the hemp of the place, and for the fisheries and the timber trade. They also manufacture some coarse stuffs. The town is connected with the continent by three bridges over the three arms of the Divenow. Here, or in the immediate vicinity, stood the town of Julin, which was a populous place, the entrepôt of the Baltic trade, but which was totally destroyed by Waldemar, king of Denmark, in 1170.

(Hassel, Handbuch; Müller, 'Wörterbuch des Preussischen Staates'; Hübner's Zeitungs-Lexicon; Stein's Lexicon.)

WOLLSTONECRAFT, MARY. (Godwin.)

WOLSEY, THOMAS, the celebrated cardinal of that name, was born at Ipswich in the county of Suffolk, in 1471. The tale that he was the son of a butcher is incredible, though it does not rest upon any sure foundation. It appears that Robert and Joan Wolsey, his parents, were poor but reputable persons, and possessed of sufficient means to provide a good education for their son. After having sent him to a school in Connecticut, he was admitted to Magdalen College in Oxford; where he graduated at the age of fifteen, gaining by his early advancement the nickname of the boy bachelor. (Cavendish's 'Life of Wolsey.')

He was made fellow of his college, appointed tutor's school in connexion with it, and was ordained. At school were three sons of the marquis of Dorset, with whom Wolsey became acquainted, and through whose patronage Wolsey enjoyed his first ecclesiastical preferment, the living of Lymington in Somersetshire. He was otherwise. An estate of three and a quarter in the address, which, combined with great natural ability, and a keen and rapid judgment of character, greatly assisted his promotion. We cannot follow him through every step of his progress, even at the beginning of his career. Thence we know that he was in time appointed chaplain at Exeter, received friendships and obtained confidence in each place where he resided. It is said that while he lived at Lymington he got drunk at a neighbouring fair; for some such reason it cannot be, he lost some of his red tape, a punishment for which we find that he subsequently resented himself. Still he had wherewithal to counterbalance his errors. Through his intimacy with a Somerset gentleman of some importance, he shortly afterwards obtained two appointments. The first was to Pdden with a message concerning the marriage of the king; dispatch was necessary, and the king intrusted the business to Wolsey, who travelled with such rapidity as to return to London before his master knew of his departure. He was thereby raised to a position above the rest of his order; was summoned to parliament to answer for his conduct, was nominated Archbishop of Canterbury, 1508. In the following year the king died, and a second cardinal Wolsey, widely different from his father's, raised a general expectation of an entire change of counsellors and favourites.

Up to this time Wolsey had had no opportunity of playing a great part. He had risen indeed, and very rapidly; but he was an object of low birth, and sufficient time had not elapsed for him to gain any very great elevation. But in the changes to be made in the accession of the new king, it soon became evident that Wolsey's position was such as to give the king great satisfaction: the credit that he raised by this service contributed to procure him the valuable deanery of Lincoln, to which he was appointed in February, 1508. In the following year he was created cardinal, and, as a second cardinal, was raised to the archbishopric of York. This was a matter of great public interest, and no wonder the people contributed to secure him a place near the person of the king. There were animosities between the earl of Surrey, the lord-treasurer, and Fox, bishop of Winchester, who held the important offices of privy seal and secretaries of state. The king, therefore, sought to place near the king one of his own friends and adherent. For this purpose he made Wolsey the king's almoner, trusting that his active spirit, his acuteness, and infatuated address would make the favourites of the court, the chief encroachments of the bishop's domain, and the chief courtier did not disappoint his patron: he rose so quickly in the king's good graces, that he soon did nearly what he pleased. He had no religious scruples to deter him from accepting
the king's humours and pleasures; on the contrary, he pro-
moted his careless gaiety, knowing well that the more time
the clergy employed in its pursuit, the more necessity
he should find to use his wiles to conciliate him with
the information which he needed, and to proceed with the busi-
ness which he intended to transact. Thus, though the king
never wholly neglected his affairs, the conduct of them chiefly
fell to Wolsey's share. The success of his
general management was soon proved by the gifts that
were bestowed upon him. Before the year of the king's
accession had passed he had been made lord-almighty, and
had been presented with some valuable lands and houses in
the See of St. Paul's. The archbishopric of York was never
held forfeited to the crown. In 1510 he became rector
of Torrington; in 1511, canon of Windsor and registrar
of the order of the Garter; in 1512, prebendary of York;
in 1513, dean of York, and bishop of Tournai in France; in
1514, bishop of Lincoln, and in the descent year Adrian VI.
of York. In 1516 he was made a cardinal, and succeeded
Warham as chancellor. In 1516 the pope made him
legate a latere, a commission which gave him great wealth,
and almost unlimited power besides. Yet he,
likewise, married for the foreign bishops who held them, the
revenues of the dioceses of Bath, Worcester, and Hereford,
allowing them fixed stipends far below the annual pro-
ceeds which were collected; he had also in commendam
to the queen Catherine, his last wife, a sum of money
that he derived from these sources were further increased
by stipends received from the kings of France and Spain
and the duchy of Venice. Thus Wolsey had the whole
power in the state, both civil and ecclesiastical, and derived
from his exactions both against the foreign excommunicated
which no subject has ever approached: his wealth and
influence were almost an encroachment on the dignity of
the crown. His ambition however was not satisfied;
his anxiety for the papacy was avowed; nor did his expecta-
tion of greater wealth. He sought the marriage of Maximilian (1519) both the kings of France and Spain
aspired to the empire; and each, eager to secure the
influence of so powerful a minister as Wolsey, promised to
assist him in his designs. At the death of Leo X. in 1522,
remaining in England, the marriage of Anne of Cleves,
Wolsey sought the vacant throne, but in neither instance
was he chosen. His foreign policy seems to have been
biased by his disappointment, which he attributed to
Charles V., whom he ever afterwards held in aversion.
We have other instances of the continuance of his resent-
ment and his inability to forgive. He had taken offence
at the duke of Buckingham's conduct towards him: that
nobleman's indiscretions afterwards subjected him to an
attack on the dignity of the court, which was increased by
severity; and though there were no public reasons for such
harshness, instigated his execution. An outcry was raised
against him for his want of leniency towards this popular
favourite; it soon subsided however, for his power made
him a great influence admired.

Nobody could vie with Wolsey in display: his retinue on
the Field of the Cloth of Gold was more numerous and
splendid than that of any subject; and during each foreign
mission on which he was employed, he was attended with
extraordinary pomp. At York Place (now Whitehall), his
residence was furnished with every luxury; and he built
for himself at Hampton Court a noble palace, of which he
eventually made a present to the king. His dress was
gorgeous, his habits as sumptuous as his dress; he had
command of more than fifty human beings; there
were among them many people of rank, the earl of Derby,
Lord Henry Percy, and others. He had 'a steward' (says
his biographer Cavendish, who was his gentleman-usher)
'who managed and conducted all his servants; a steward,
and a comptroller an esquire; which have always
within his house their white staves.' In his privy kitchen
he had a master-cook, who went daily in damask, satin, or
velvet, with a chain of gold about his neck. The
provisions which were used however were by no means such
though it must be added that he promoted learning with
consistent liberality: the university of Oxford is indebted
to him for its Cardinals, now Christ Church College; and
for several professorships, which, with the lectures,
found him a very liberal patron. He was the father of Ipswich, but not only had
short absence: he likewise encouraged learned persons by
patronage and gifts. He was himself no mean scholar, and he is said to have assisted the king, by his intimate
knowledge of the works of his favourite author, Thomas
Aquinas, and other theological writers, when he composed
his treatise against the Jewish writers. He had,
in the Latin rules for his school of Ipswich, which are extant:
they are printed in the 'Essay on a System of Classical
Instruction' (London, John Taylor, 1825), and contain
the course of Latin instruction which Wolsey prescribed for
the Athenian boys into which he divided the school.

The see of Durham, to which he had been recently ap-
pointed, Wolsey resigned for that of Winchester. It does not appear that he encouraged any change of doctrine
among his clergy: his adherence to the Roman Catholic
Church was unchangeable. The Reformation, however,
made little progress, though many of its seeds were sown in his
time. His abuse of ecclesiastical revenues and duties
gave convincing evidence of the necessity of change: such
rapid translation from dignity to dignity, so large a number
of offices held continually by the same hand while their
duties were for the most part neglected, were evils that
could not long be tolerated. The exercise of his legislative
powers with regard to the examination and suppression of
the monasteries, his conduct likewise in the matter of
Queen Catherine's divorce, gave strength to the dawning
Reformation.

To circumstances connected with the divorce Wolsey's
fall is mainly attributable: he advised the king to put
his resolve against his wife; he offended both the actual queen and the queen elect.
An oppressive and illegal taxation had made him unpo-
pular with the multitude; while at court there were pow-
erful enemies labouring continually to poison the king's
judgement against him. A certain prebendary, whom he had treated with such
unlimited confidence, and trusted with such unparalleled
authority. The dukes of Norfolk and Suffolk, and Lord
Rochford, Anne Boleyn's father, united in their efforts to
overthrew him. 'They insinuated,' says Dr. Lingard, 'that
he had never been in earnest in the matter of the dis-

vorce, and had uniformly sacrificed the interests of his
sovereign to those of the king of France.' At length Anne
Boleyn induced the king to promise that he would speak
to him no more. At the commencement of the Michaelmas
term, 1529, twenty side-churches were suppressed in the
Court of King's Bench, charging him with having, as
legate, transgressed the statute of primogeniture. Wolsey
admitted the charge; 'of which he was technically guilty, inasmuch as he had received the pope without
normal licence.' (Sir J. Mackintosh, 'Hist. Eng.,' vol. ii.,
p. 166.) 'The court pronounced their sentence, that he
was out of the protection of the law, that his lands, goods,
and chattels were forfeited, and that his person was at the
termination of the court in the county-house belonging to the see of Winchester; and
was so closely shorn of all magnificence, as nearly to be
wanting in the ordinary comforts of life. Many of his
friends deserted him: Johnson's celebrated words ('Vanity
of Human Wishes')—

Mark the keen glance and watch the sign to late,
Where'er he turns, he meets a stranger's eye,
His suppliants soon him, and his followers fly—

are true, save in their reference to his followers, who showed most flattering attachment to his master in his
distress. He sank into a state of the most abject dejection
(Lingard, vol. vi., p. 209), until even his enemies could
not help pitying him. His capacious master temporarily
restored to the see of Winchester and the abbey of St.
Albans, with a grant of 6000l., and of all other rents not
parcel of the archbishopric of York. Even that great
diocese was afterwards restored. He arrived at Cawood
Castle about the end of September, where he em-
ployed himself in magnificent preparations for his installa-
tion on the archiepiscopal throne.' His popularity in
the north was increased by his hospitality and an affability
which circumstances had taught him. If enemies at
first hesitated to cast off the pope favoured their design,
for under these circumstances it was evidently little desirable
that a cardinal should fill the principal offices in the
Church. The earl of Shrewsbury and his friends
arrested him for treason, and brought him to London to stand
his trial. With what particular act he was charged we are
not informed. He proceeded towards London on his
mule, but by the way he was attacked with a dysentery.
As he entered the gate of the monastery at Leicester, he said, 'Father Abbot, I come to lay my bones among you;' and so the event proved: the monks carried him to his bed, upon which, three days afterwards, he expired (November, 1530). Shakespeare has little altered the words he used on his deathbed, though they were spoken to Kyngton, the lieutenant of the Tower, and not, as in the play, to Cromwell:—

'Had I but served my God with half the soul / That served my lord, he would not now lie here / With thick unburied earth upon his bones.' Henry VIII., Act iii., sc. 2.

'The king,' says Hume, 'much regretted his death, and always spoke favourably of his memory: a proof that human nature in its reason or any discovery of the hand of Providence had occasioned the last persecutions against him.'

Wolsey attained his elevation by a winning address, combined with shrewdness, talent, and learning; his ambition and capacity were unlimited; he was revengeful, arrogant, and clever-ranging. An extreme fondness of display and parade. There can be no doubt that he used his influence abroad as well as at home for his own advancement; but upon the whole he was a valuable minister, enlightened beyond the age in which he lived, diligent in business, and a good servant to the king for whose authority he was established he restrained many of the king's caprices, and kept his passions within bounds: the latter part of Henry's reign was far more criminal than that during which the Cardinal governed over his own house. His part in the death of the duke of Buckingham,' says Sir J. Mackintosh, 'was his most conspicuous crime: the circumstance most favourable to him is the attachment of dependants.'

For the rest the standard of morality was but low, and there was little in Wolsey's character which tended to raise it. Had there been a doubt that Thomas Winter was his natural son, it would have been almost removed by his confessing eleven benefices upon him. He is said to have had two other children, but the fact is not accurately proved.

(Cavendish, Life of Wolsey; his Life, by Fiddes; Grove, Life and Times of Wolsey; more modern Lives, by Galt, in Lardner's Cyclopædia, and in the Lives of Eminent Persons, by the United Knowledge Society; Hume's and Lingard's Histories.)

WOLSEY'SHAM. [DERBY,]

WOLVERHAMPTON, a large manufacturing town and parliamentary borough in Staffordshire, 126 miles north-west of London by the Birmingham and London railway, and about 13 miles north-west from Birmingham.

Wolverhampton is situated on rising ground, and consists in general of substantial and well-built houses, mostly of brick; the streets are somewhat irregularly laid out, and not bordered, but are well-tended, there is a neat theatre and a public subscription library, over which is a suite of rooms used for concerts and assemblies. There are four churches; the oldest is that of St. Peter, a spacious structure, capable of accommodating 1000 persons. The pulpit is great, and is uniformly sculptured, and there is a font of great antiquity, with curious bas-relief figures of saints. In the churchyard is a column twenty feet high, with rude sculptures in compartments, supposed to be of Saxian or Danish workmanship. The church is collegiate, and the dean, who holds the prebend of Wolverhampton, and seven other prebendaries, by a grant of Edw. IV., confirmed by subsequent grants, the deanery and prebend of Wolverhampton, being annexed to the deanery of his free church of St. George, within the castle of Windsor. The net revenue, on an average of three years ending 1831, is £461.

The dean receives the whole revenue. The living is a perpetual curacy, in the patronage of the dean of Windsor, and of the average net annual value of £307. The other churches are modern, and all perpetual curacies: St. John's, in the patronage of the Earl of Stamford and Warrington, of the net annual value of £203; St. George's, in the patronage of the dean of Windsor, of the net annual value of £326; and St. Paul's, of which the value is not given in the Report on Ecclesiastical Revenues. All the chief denominations of dissenters have places of worship. A dispensary was established in 1821, and the present commodious building was erected in 1830. A union-mill was built in 1813, at an expense of 14,000l., for the purpose of grinding grain at a cheap rate for the poor. We have authors which state whether it continues to be used for that purpose. There is now a union workhouse, which, in 1841, contained 204 persons.

According to the Education Returns of 1833, there were four infant schools and fifteen daily schools. Of the daily-schools, one was a free grammar-school, supported by endowment, with 70 male scholars; the salary of the head master was 400l. of the second master, 200l. and of the assistant master, 120l. This school, supported partly by endowment and partly by subscription, which, in 1833, educated 100 male scholars and 50 female scholars. There was at the same date a national school, with 400 children of both sexes daily and 240 on Sunday. Besides these, there were two board-schools or three or four Sunday-schools supported by different classes of dissenters.

Wolverhampton was made a parliamentary borough by the Reform Act, and returns two members to parliament. The population of the town is 87,508 in 1841. There are 906, 1,183, 1831, 70,780 in 1841 it was 70,780.

The district in which Wolverhampton is situated abounds in mines of coal, iron, limestone, and other minerals, at the manufactures consist chiefly of iron-works, and iron-ware, locks and keys, guns, firearms, and a variety of other articles of hardware. Besides its way-communication with London, Birmingham, Liverpool, Manchester, and other towns on the same line, it is connected by canal-navigation with most of the great towns of England—London, Hull, Birmingham, Derby, Notts, Chester, Liverpool, &c.

A monastery was founded at Wolverhampton in 694 by Wulfrans, sister of King Edgar. The monastery was surrendered to Hubert, archbishop of Canterbury, in 1217, and the lands afterwards annexed the bishopric of Windsor. The town was named Wulfruna Hama, after the foundress of the monastery, which by contact and corruption has become Wolverhampton.

(Boundary Reports, 1832; Education Enquiry, on Educational Revenues of England and Wales: Population Returns.)

WOLVERINE. [GULO.]

WOMAN. [MAN.]

WOMB. [MACHUPILLA, vol. iv., p. 489.]
The secrets of plants that are most important to man are not often deposited with woody tissue, and therefore the wood of trees is not often employed as food or medicine. Animals however are found capable of digesting the lignine of which woody tissue is composed, and thus wood forms a part of the diet of some forests, and for man himself lignine may be treated chemically in such a way as to render it a nutritious article of diet. It is the peculiar resinous, gummy, oily, or other secretions, that give to the various woods their different colour, smell, and taste. The following matter is sometimes deposited on such abundance as to render it useful for dyeing, as seen in logwood, red sanders-wood, and other woods used as dyes. Some woods have volatile oils deposited in them, which, being constantly given out, renders them odorous; and this is the case with sandal-wood, rose-wood, the wood of cedar, fir, and other trees. Frequently bitter and other secretions are deposited in wood, giving it a peculiar taste, and rendering it useful in medicine. The wood of this quassia, as well as of the same species, is employed for the tanning of hides.

If wood is submitted to destructive distillation, it is decomposed, and the consequence is the production of acetic acid and an oil, which is then removed, and the leaving a certain quantity of charcoal. The following is the table of the products of the distillation of one pound of different woods dried at 86° Fahrenheit:

<table>
<thead>
<tr>
<th>Wood</th>
<th>Weight of wood</th>
<th>Weight of charcoal</th>
<th>Weight of carbonic acid</th>
<th>Weight of prussic acid</th>
<th>One ounce of charcoal</th>
</tr>
</thead>
<tbody>
<tr>
<td>White birch</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Red beech</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Large-leaved linden</td>
<td>6 1</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Red or scarlet oak</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>White beech</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Common ash</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Horse-chestnut</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Italian poplar</td>
<td>7</td>
<td>4</td>
<td>1</td>
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<tr>
<td>Silver poplar</td>
<td>7</td>
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<td>1</td>
<td>4</td>
<td>3</td>
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<tr>
<td>White willow</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Sasafras laurel</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Wild service-tree</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Hasket-willow</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Dogberry-tree</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Buckthorn</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Logwood</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Alder</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Juniper</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>White fir (deal)</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Common pine</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Red deal</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Guia-wood</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

The woods that are used by the cabinet-maker for furniture of a more delicate kind are called fancy-woods. The use of these has become much more general since the introduction of the art of veneering; and now that this is done by machinery instead of hand, a number of woods are used for furniture and other purposes, which, on account of their scarcity, could have been formerly used only to a very limited extent. [VENNERING; SAW-MILL.]

The most common of the fancy woods and that which is used most by the cabinet-maker is mahogany. This wood is the produce of the Sterculia mahogoni. [SWITZENVIA.]

Next in point of importance and use to mahogany is the Rose-wood. This wood obtains its name from its fragrance, and is the produce of a mimos from the coast of Brazil. In veneering it affords from eight plates to the inch. King-rose is a beautiful wood much in use; it is brought from Brazil in logs four feet long and about five inches wide. It is used only for delicate articles, and is said to be the produce of a species of Baphia, a genus of leguminous plants. Rose-wood is a very hard wood, of a pale red colour, and is brought from New Holland in logs nine

The conducting power of wood in relation to heat is a matter of importance in the construction of buildings and other purposes. In some experiments performed by Delaive and De Candolle on prisms of different kinds of wood, to ascertain their power of conducting heat, they found that the direction of the fibres materially interfered with their conducting power. Thus it appeared that the obstruction of the passage of caloric was greater when the current was at right angles to the woody fibre than when it flowed longitudinally in the direction of the fibres. This difference also appeared to increase in proportion as the wood was a bad conductor of heat. The conducting powers in the two directions may be represented very clearly by the following numbers:

<table>
<thead>
<tr>
<th>Length of the fibre</th>
<th>Conducting power.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nut-wood</td>
<td>5</td>
</tr>
<tr>
<td>Oak</td>
<td>5</td>
</tr>
<tr>
<td>Fir</td>
<td>5</td>
</tr>
</tbody>
</table>

Hutchinson found in his researches on the conducting power for heat of building materials, that taking the conducting power of fir-wood as 100, beech-wood was 83·10, and oak 134·10. But if the woods were compared with slate as 100, their conducting power would be as follows:

<table>
<thead>
<tr>
<th>Conducring power.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fir-wood</td>
</tr>
<tr>
<td>Oak-wood</td>
</tr>
<tr>
<td>Beech-wood</td>
</tr>
</tbody>
</table>

The cooling power of these woods is another important point, and this is not at all in relation to their conducting power: thus fir-wood being 100, the cooling power of oak-wood is only 30·38, whilst that of beech-wood is 120·2. Compared with slate as 100, the cooling power of the woods are as follows:

<table>
<thead>
<tr>
<th>Cooling power.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak-wood</td>
</tr>
<tr>
<td>Fir-wood</td>
</tr>
<tr>
<td>Beech-wood</td>
</tr>
</tbody>
</table>

Another important point of inquiry with regard to the physical properties of wood, as to its value in building, &c., is its relation to moisture. If the specific gravity is 1·000, we should expect that the less the specific gravity of the wood the greater would be its capacity for moisture; and Hutchinson found, on immersing 100 grains of each of the following woods for twenty minutes in water, that such was the result, for they had gained as follows:

<table>
<thead>
<tr>
<th>Gained.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak-wood</td>
</tr>
<tr>
<td>Fir-wood</td>
</tr>
<tr>
<td>Beech-wood</td>
</tr>
</tbody>
</table>

The wood that is most used by the cabinet-maker for the manufacture of veneer, or that is most resembling mahogany, is the Rose-wood. This wood obtains its name from its fragrance, and is the produce of a mimos from the coast of Brazil. In veneering it affords from eight plates to the inch. King-rose is a beautiful wood much in use; it is brought from Brazil in logs four feet long and about five inches wide. It is used only for delicate articles, and is said to be the produce of a species of Baphia, a genus of leguminous plants. Rose-wood is a very hard wood, of a pale red colour, and is brought from New Holland in logs nine
foot long and thirteen or fourteen inches wide. The tree from which this is obtained is unknown to botanists. The wood is literally that which is used for making the fancy-woods of commerce. Tulip-wood is brought into the market in very small pieces, not more than four feet long and five inches in diameter, so that probably it is the production of a shrub. It is clouded with red specks, which give it a yellow colour and are used for bordering and making small articles, such as caddies and work-boxes. Zebra-wood is the production of probably a large tree, as it is cheap enough to be made into tables, pianofortes, &c. It is coloured brown on a white ground, and clouded with yellow streaks. Tronc-wood is a brilliant yellow wood, with delicate glowing shades. It is the produce of a plant called Chlorosygon Sieberiana, and is a native of India. It is one of the trees that yield the wood-oil of India, and it belongs to the natural order Caudalaceae, the same order in which the mahogany is placed. It is found in the market in logs two feet wide and seven or eight feet long. Sandle-wood is the produce of a species of Sandoricum belonging to the family Meliaceae. The wood is of a light brown colour, with golden-coloured veins. Ebony-wood are the names given to some very hard woods, the produce of the natural order Ebenaceae. These woods are mostly brought from India, although some of the species are found in Europe and America. There are several other woods occasionally used among cabinet-makers and work-masters, and of which little is known, either as regards to the places they come from or the trees to which they belong. Canopy-wood has a deep yellow colour; Purple-wood has a purple colour, without veins; Siam-wood is of a dark brown colour, with yellow shades; Calamander-wood is a handsome, cheap wood, taking a high polish, and is brought from Ceylon. Other woods are called from the places they come from, as Coromandel wood, Ambonya wood, &c.

The practice of staining wood is sometimes had recourse to for the purpose of making the more common woods resemble in colour the fancy-woods. A method has lately been proposed of doing this by introducing into the tree during its growth various colouring agents, so that during the process of drying the natural colour of the wood is taken up and deposited in the woody tissue. Some of the woods thus treated have been made to assume very remarkable colours, but as the trees on which it can be practised are too soft and coarse for fine work, it is not likely that this method will at all supersede the use of the naturally beautiful fancy-woods.

For further information concerning wood consult the articles Exogenous; Endogenous; Lignin; Lignite; Vegetable Kingdom; Tissues; Vegetable for information concerning woods of particular names, see the name of the genus, as elm, Ulmus; oak, Quercus, &c.: for laws relating to wood, see Timber and Timber-trade.

(Meyen, Pflanzen Physiologie; Hutchinson, On the Conducting Power, with regard to Heat, of Building Materials; C. J. Petherick, Dictionary of Architecture and Building; Don's Miller; Lindley's Natural System; Encyclopaedia Americana.)

W O O D, or A W O O D, ANTHONY, was born in the city of Oxford, Dec. 17, 1632. His father was a gentleman of Eton College. Anthony was sent to a private Latin school in 1640, and in 1641 was removed to New College, Oxford, but in 1644, in consequence of the civil disturbances, was sent to a school at Thame. In 1647, he placed himself under his brother Edward at Trinity College, Oxford, and he went to him once or twice a day to receive instruction. On the 29th of May, 1647, he was matriculated in the University of Oxford as the son of a gentleman, and entered Merlon College, Oct. 18, 1647, and in 1648, aged 19, he began to learn to play the violin, at first without instruction, but afterwards under a teacher. He seems to have attained to great skill on the instrument, and was for many years a member of a musical club in Oxford, in which concerted pieces were performed, both at home and abroad. One of the ablest of some eminent church musicians. Painting was also another of his favourite pursuits, but there seems to be no evidence of his skill in that art. He graduated A.B. in 1652. Hereditary, which also became one of his studies, was perhaps better suited to his attainments than his musical studies. The University attracted the attention of Dr. Thomas Barlow, the head keeper of the library, who treated Anthony with much kindness, gave him every assistance in his power, and even allowed him to take books and manuscripts to his home.

In December, 1655, Wood took the degree of A.M. Dugdale's 'Antiques of Warwickshire' came out in 1652, and was read by Wood with great delight and admiration. His fondness for the study of antiquities was confirmed on his removal into the muniments and arms in the parish churches and colleges church of the city and university of Oxford. After the restoration he obtained leave from Dr. Wallis, in 1660, to copy the University registers, monuments, and other documents in the Sheldon Tower. This was a valuable fund for his future study, and here he may be said to have laid the foundation of his History and Antiquities of Oxford.' In 1667 Wood went to London with a letter of introduction from Dr. Rolle to Sir William Dugdale, by whose influence he obtained leave to peruse the manuscripts in the Cotton Library and the records in the Tower.

Wood having completed his History and Antiquities of Oxford,' the University offered him 100L for the copy, which he accepted in October, 1669, and the payment was made in 1670. This was with the intention of having the work translated into Latin for use of foreigners, which was done under the inspection of Dr. Fell, and the work was published at Oxford in 1654 in 2 vols. folio, with the title of 'Histoires antiquitates Oxonienses.' Of this translation, &c.; Dr. Thomas Worson, who says it is supposed to be a less prejudiced judge, remarks, 'I cannot omit the opportunity of mentioning that Dr. Fell's version is more correct in the sense of Wood, and that the English work is, I think, infinitely more pleasing in its style and diction, in its artless but accurate author. The translation in general is allowed to be full of mistakes: it is also of an unpleasing, perpetually disgusting the reader with an affected prosody.

In 1681 Wood published his 'Athenea Oxoniensis, an exact History of all the Writers and Bishops who have held their education in the University of Oxford from 1500 to 1685, to which are added the Fasti or Annals of the University from the year 1167, with a translation into English, written in very slovenly English, but it contains a valuable fund of materials, selected with care, though not always with judgment and without prejudice. He was prosecuted in the vice-chancellor's court of the University for some remarks in the same book, on the character of the late Earl of Clarendon, and received a sentence of expulsion. He was also tried by Bishop Burnet, and reprieved in a 'Vindication,' &c., in 1709.

Wood died Nov. 29, 1695, aged 65. He was a large strong man. He retained his faculties to the last, and just before he died gave directions for the burning of a great mass of manuscripts, and left his books and such of his manuscripts as he considered of value to the University of Oxford; they were deposited in the Ashmolean Museum. In 1721 a second edition, 'corrected, and enlarged with the addition of above 500 new lives from the authors original manuscripts,' was published in London, 2 vols. by Philip Bliss, and published at Oxford. Wood's Athenae Oxonienses continued to 1800, 4to. 2 vols., 1818. In the 7th volume, published in 1717, was added 'Fanti Oxoniam or Annals of the said University, with Notes and Additions.'

The Rev. John Guth, M.A., register of the University of Oxford, published in 1788-94, at Oxford, 'The History and Antiquities of the University of Oxford, now first published in English from the original manuscripts in the Bodley Library in the University of Oxford.' The book was published to the present time, by the Editor, 3 vols. 4to. (Biographia Britannica; Watt's Bibliotheca Britannica.)

W O O D, JOHN, commonly spoken of as 'Wood of Bath,' was an architect of considerable reputation, and in the time of George II., in ability and taste little if at all inferior to any of his contemporaries; although he has obtained less notice from architectural and biographical writers than some of them have done. In fact, he little can now be traced in the polite library, unless by himself what he has himself incidentally told us in his 'Description of Bath. That city is indebted to him for its architectural plan, and he may be considered as having introduced a style
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about architecture till then quite unknown in this country, by combining a number of private houses into one general design; and although such mode of producing continuous facades was afterwards adopted by the Adamas, it was followed by Nash, and has since become very general. Wood stated his methods to be nearly the first in point of time at the end of the 16th century.

It was about the end of 1736 that he began his Bath improvements, which he carried on uninterrupted for about twenty years, within which time he entirely changed the place. They do complete the surrounding scenery upon even a degree of magnificence, at least as displayed in such parts as the Parade, the Circus, the Royal Crescent, Queen Square, and some of the public edifices, and none of these would have been superior to what they are now, if Bath were designed by any other architect. If not altogether proof against criticism, they are at any rate free from the sneering reproaches levelled against many later works of the kind, as being mere bath and plaster; and Smollett has spoken of them very depreciatingly in his novel of "Humphrey Clinker," others have been even more prodigious of praise. Among last is the author of the "Principles of Design in Architecture," Theodor, who says, 'With all its faults in parts, I must reckon the Crescent at Bath among the most extensive, the most noble, and the most entirely carried out, as the world, and he further lauds the large decay of architectural taste at Bath since Wood's time.

What he did at Bath alone would justly entitle him to rank in English architecture, and not least of all for the very reason which has perhaps accustomed him to be passed over with mere passing notice, namely, as he distinguished himself as the founder of a system of improvement that has never been equalled, and has never been surpassed in its true spirit and in its intention to produce some works of the latter class that would have preserved his name from oblivion, and among them as the noble mansion of Prior Park, erected for the person of Sir John Throckmorton. This house was finished in 1743. This last, if not a very large, a very noble structure (110 by 148 feet), and the principal would for a much greater extent of the Palladian style than anything by Palladio himself.

Wood, while engaged in the peace for Ireland, died May 23rd, 1754, but at what age is not said: he was probably born about the close of the 17th century. He was also known as a philosophical writer, and upon his life by his Origin and Character, which was published, more or less, 1741, which was afterwards enlarged and improved in its arguments, its opinion tending to show that the system of architectural beauty and proportion is derived from the Jewish nation. To this subject, whether they are entitled to a description of Bath, second edition, 2 vols. 8vo, plates, London, 1745; and 'Description of the Exchange of Bristol,' with plates, 8vo, Bath, 1745.

WOOD, HENRY, was an accomplished scholar and archæologist, a native of Ireland, having been born at Riverstown in the county of Meath, in 1716. Having finished his studies at Oxford, where he applied himself with extraordinary diligence to classical and more especially Grecian literature, he resided Italy more than most in 1726 made a voyage as far as the island of Chios; but it was not until 250 that, in conjunction with his friends Bouvierie and Avius, and with the Italian architect Borra for their labour, he set out on his celebrated antiquarian expedition through Italy. Before returning Palmyra, Bouvierie died of fatigues, but Wood and his remaining companions pressed their researches and labours with success. Almost immediately on his return he published his "Essay on the Genius of Homer," he was made under-secretary of state by the Earl of Chatham, in consequence of which he suspended his literary studies, and that work was not published till after his death (which happened at Putney, September 13, 1771), when it appeared under the title of 'An Essay on the Original Genius and Writings of Homer; with a Comparative View of the Ancient and Present State of the Trojans,' 4to, London, 1775. This learned dissertation, which has been translated into French, German, Italian, and Spanish, treats of the country of Homer, his travels, his system of mythology, and of the theory of poetry and ethics in his "Odyssey." It is however by his two other works that he is now more generally known, and they are a most important addition to the history and archæology of architecture, affording the most extended notice of Roman magnificence in distant regions, and in places where its existence had come to be nearly regarded as fabulous. For some account of the edifices there discovered, see BAILLIE AND PALMIRA.

WOODALL, JOHN, an English surgeon, was born about the year 1556. He was a surgeon in the army during the reign of Queen Elizabeth, and went to France with the troops under Lord Willoughby. On his return he settled in London, and was very active in his attentions to those sick of the plague which prevailed in London in the early part of the reign of James the First. There is no record of his having been a surgeon in the navy, but in 1612 he published a work describing the diseases of sailors. He was appointed to the title of the 'Surgeon-Major.' In this work there is an excellent account of the fearful epidemic, as it prevailed at that time, known by the name of scurvy. In the same year that he published this book he was appointed surgeon to St. Bartholomew's Hospital. In 1623 he published a work entitled "The Author's Practice, as a Treatise on the Plague," and a work upon "Gangrene and Spasmodicum." All these works were collected together and published in London, in 1639. These works display sound observation and correct reasoning, and obtained for him an extensive reputation. He had a large practice in London, and was made a master of the Surgeons' Company. There is no account of him at which he died. In the preface to the works published in 1639, he speaks of himself then as in infirm health. (Hutchinson's Modern Biographies.)

WOODBINE. [CONTULYCHAE.] WOODBRIDGE. [SUFFOLC.] WOOD-CUTTING MACHINERY. This term, though applicable also to contrivances for cutting wood by means of toothed instruments which tear away or remove a portion of its substance, and which are treated of under Saws, is, vol. xx., p. 476, and under Mill, p. 168. it is the same volume, as being too distinct a subject to be thus treated. It is for dividing wood by knife-like or sharp-edged instruments, which most commonly act by the simple division or separation of the fibres, as explained under Saw, and which are merely split off from the surface by intersecting its fibres, divide it into several pieces without any waste of material such as is necessarily occasioned by the use of a saw.

The valuable nature of some of the woods used for veneering, and the extreme thinness of the sheets into which it is divided, often not exceeding the thickness of the saws employed for cutting them, renders it important to save the wood which is reduced to sawdust and wasted by the ordinary method of cutting. This has been accomplished in some degree, by using the flat or horizontal veneer machine, acting upon the same principle as a carpenter's plane, but powerful enough to remove, by a single operation, a shaving thick enough to be used for veneering, and equal in width and length of strips, and divided into its fibres. This principle of cutting has been most ingeniously applied in a veneer-cutting machine used in Russia, of which descriptions have appeared in many English works on machinery. In this machine the length of the blade is rather less than the length of the log, which is to be converted into veneer, and the log is mounted upon an axis parallel with its edge, and turned to a circular form. The blade is then pressed against the log in such a way that, as the latter revolves slowly upon its axis, a thin spiral sheet or shaving is cut from its surface, and as the former is pressed in proportion to the constantly diminishing diameter of the log, this operation is continued until the greater part of the timber is converted into one continuous sheet of veneer, which, as fast as it is pared off, is rolled up upon a cylinder like a roll of cloth. By this curious contrivance, it is said that more than one hundred sheets of veneer are produced in a single day, each sheet being nearly one hundred feet in length.
trivance veneers of any size may be produced, and the wood may be converted without waste into sheets so exceedingly thin that some have been used for covering or binding books. The appearance of the grain is of course somewhat different to that of veneers cut in the usual way, and it is said that the veneers cut by knife-edge machinery are not to be polished as those cut with a saw, since the surfaces being furrowed by the mode in which the fibres are, as it were, torn away from each other, instead of being intersected by the saw. So rapid is the action of the Russian spiral veneer-cutting machine, that it will produce 100 feet in length of veneering in three minutes.

The application of knife-edge machinery to the cutting of wood has recently excited much attention, owing to the establishment, by Captain Taylor, of a factory for barrels and similar articles by such means near Waterloo Bridge, London. Having reduced the work which is to be converted into staves to blocks of suitable length, the process is to steam them in ovens or boxes similar to those used by shipwrights for steaming timbers to be bent, and then to cut them into the required form by cutters worked by machinery, wares on the in a softened state. By various machines the several parts of a cask or other vessel are shaped with greater regularity than could be accomplished by hand, and with astonishing rapidity; and they are finally fitted together by similar means. The same kind of machinery is applicable to the cutting of park-paling and many other articles; and so great is the power of the cutters upon wood which has been properly prepared, that a person who witnessed experiments upon various kinds of wood, reported that the knife went through a log of African oak with as much ease as if it had been a piece of new cheese.

WOODCOCK. [SCOLOPACIDE, vol. xxii, p. 85. ]


The Lectures on the Laws of England were edited in 1834, in 3 small volumes, 8vo., by W. R. Williams, D.C.L., who observes in the preface that these lectures seem to be as superior to the Commentaries of Blackstone in accuracy and justice, as the latter is to the former; and, that they are inferior in elegance of style and charm of narrative; or, to speak in plain terms, the editor means to say that the Lectures are superior to the Commentaries in all matters which constitute the merit of a law book; and he is quite right, inasmuch as a student who would be familiar with the Commentaries, instead of reading Blackstone, would learn nothing of English law. The editor's notes are useful.

WOOD-ENGRAVING is the art of producing raised surfaces, by incision, on blocks of wood, from which impressions can be transferred by means of a coloured pigment to paper, or other suitable medium, and generally applied to pictorial representations of objects.

The art of cutting both upon metal and wood for other purposes than those which are now understood as printing, as well as that of shipwrights, has been greatly improved by the invention of the engraving press. [ENGRAVING.] The Egyptians indeed seem to have made a very close approximation to printing. Some of their wooden stamps are yet remaining, and are perfectly capable of giving impressions in the manner of our present wood-cuts, though their use was not intended for the stamping on clay or other malleable material; bricks so impressed being frequently found, of which some are in the British Museum. We give, in the next column, a specimen of one of these stamps, found in a tomb at Thebes, and brought to England by E. W. Lane, Esq. The originals were cut in hard wood, and were of the size of a quarter of an inch, the edges of wood: but the process of wood-engraving to the production of a book originated, there can be but little doubt, in China, and about the middle of the tenth century, although it has been established, chiefly on account of the silence of Marco Polo, whose work was written in the last two or three years of the thirteenth century. The omission is certainly remarkable; yet on the other hand the date here given does not ascend to the period of Chinese sable, but to a period which is reached by sober historical research in the dynasty under which it is thus stated to have been invented (that of Soong) became remarkable for the rapid development of literary genius that took place under it. It is stated that the first essay in printing was made by printing on stone, and then transferring the impression to paper, and the characters of their language being thus white and the paper black, as in the example given in the cut above. This rapidly relinquished for the use of wood blocks, in which the characters were cut in relief, and the appearance of the characters or pictorial representations, which occasionally form a whole volume, the subjects being sometimes connected so that each page is from a separate block, they would and produce a total length of some hundred feet. Sometimes the illustrations to the Wain Show, pieces of music and songs sung in the streets on imperial birthday being a series of representations of the public entertainments and exhibitions, horse-racing, foot-racing, etc., of which there is a copy in the library of the Asiatic Society. The work itself is 6 vols., of a size somewhat larger than that of an ordinary pamphlet, and the illustrations form a separate volume of several hundred pages.

The method used by the Chinese is to stereotype the wood, that is to say, to rub the picture to be printed with a paste or size, occasionally made of boiled rice, which renders it quite smooth, and at the same time softens and otherwise prepares it for the reception of the characters. The future pages, which have been printed by the method described in the present paper, are delivered to the block-cutter, who, while the above-mentioned application is still wet, unites them to the block so that they adhere, but in its inverted position, the thickness of the paper disposing the writing perfectly through the back. The paper being subsequently rolled off, a clear impression in ink of the inverted writing is taken, and by pouring the ink on the surface of the block an immaterial point. Strictly speaking the press of China' would be a monographer, as no press whatever is used in their printing. The paper, which is of a thin and absorbent, or absorbent of ink, as we call silver-paper, receives the impression with a gentle contact, and is
arder pressure would break through it. The printer holds in his right hand two brushes, at the opposite extremities of the same handle; with one he marks the face of the characters, and the paper being then laid on, he runs the other brush over it so as to make it take the impression. They do this with such expedition, that one man can take off a couple of thousand copies in a day.

In Europe the first application of the art of wood-engraving took place in Germany, though the process is not exactly ascertained, but is supposed to have been near Nürnberg, about the close of the 14th or beginning of the 15th century. It was probably first used for the production of playing-cards, the outlines of which were formed by impressions from wood-cuts, and the colouring filled up by hand; or we dismiss as utterly unfounded the story told by Paullin, in his Traité de la Gravure en Boss, of impressions of a series of wood-cuts seen by him, of a date between 1324 and 1329, executed by Alexander Albericus, in his town sister; although the story is believed by Ottley (Inquiry into the Early History of Engraving), and Zanci (Materiali per servire alla Storia de' Progressi dell' incisione in Rame e in Legno). Cards were known in France in 1340. John I. of Castile issued an edict against the use of them in 1380 (Buller, Recherches Historiques sur les Cartes à jouer). In the same year, in a book of the bye-laws of Nürnberg, they are included among the games allowed to the citizens, provided the stakes did not exceed ten pennies. (Von der Quellen zur Literatur und Kunstgeschichte, part ii.) In 1418 the burgess-book of Augsburg contains the name of a 'Kartenmacher' or card-maker. The trade in cards from Augsburg, Nürnberg, and Ulm became so great that Venice prohibited imports, and in Sicily they were imported by the cask. It is then that it must have been by means of some facility in multiplying copies that they could have been manufactured so cheap as to command so extensive a demand in foreign countries, but none of the specimens now existing enable us to fix any precise date to their production.

We give one specimen, copied from Mr. Singer's interesting work on playing-cards:

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The first wood-cut with a date known to be in existence is of 1425. It was discovered by Heincken, pasted on the cover of a manuscript in the library of the convent of Boxheim, near Memmingen in Swabia, and is now in the library of Earl Spencer. It represents St. Christopher carrying our Saviour on his shoulders across a river. The two figures are drawn with much spirit; but the accessories, a man with a loaded ass, a hermit holding up a lantern, a man ascending a steep path, toward a house, show a depraved want of knowledge of perspective. It is by no means certain however that this print is the most ancient specimen we possess, as there are several others which from their greater rudeness, have been held to have superior claims to antiquity. This rudeness cannot be accepted as a proof, as there is reason to believe that these scriptural subjects were addressed to the wants of the poorer classes, and were intended to supply the place of the more costly illuminations of the rich, while they admitted of being made to occupy a middle place by being finished off by hand in colours, and indeed many of the remaining specimens owe part of their rudeness to the defect of parts intended to be so supplied. Cheapness was therefore an element necessarily required in the production of these prints.

The art however made rapid progress. The next great step was the production of black books and the adoption of movable letters. (Papworth.) Without entering into the disputed question of the date of the 'Biblia Pauperum,' the 'Speculum Salvationis,' and others, it will be enough to say that they prove the extension of its use, and many of the early books with moveable types were illustrated with pictorial wood-cuts. Of one of these works we subjoin a fac-simile specimen:—

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Who Men's Offering.

Maps also were engraved on wood. In an edition of Ptolemy, printed in 1482 at Ulm, there are twenty-seven; and in a later edition, printed at Venice in 1511, the outlines, with the mountains and rivers, is in wood, while the names are printed with type, and in two colours, no doubt by separate workings. In England the original map of London by Aegagros, measuring 6 ft. 3 in. by 2 ft. 4 in., to which the date of 1560 was assigned by Vertue, though it was probably some years later, was on wood. In several blocks worked on separate sheets of paper. In 1486 the improvement known as 'cross-hatching,' by which the bold and free effect of a pen-drawing was endeavoured to be attained, was shown in Breideneck's 'Travels,' printed at Mentz. This invention has been usually attributed to Michael Wolgemuth, the master of Albert Dürer. This work however preceded by seven years the Nürnberg Chronicle, said to be by Wolgemuth, but who probably only furnished the designs, and the execution of the cuts is in a very superior style to that of any existing contemporary production; two fac-simile specimens are given in 'A Treatise on Wood-Engraving, Historical and Practical,' executed by J. Jackson.
the most complete work that has been produced on the subject in this country, and to which we are much indebted, although we have been compelled to differ from some of the opinions therein.

The art had now attained an excellence which induced artists of celebrity and talent to select it as the means ofdiffusing their designs to the public. Among the distinguished in this line was Albert Dürer, whose productions as a painter, and an engraver on copper and wood, are so numerous as to excite a doubt whether he was actually an engraver on wood himself, or whether he only put the designs on the blocks himself, leaving it to his father's hands to execute. Bartsch, in his Print-Graver, and the writer of the work above mentioned, A Treatise on Wood-Engraving, have agreed that he did not engrave on wood. The last named says, of all the wood-engravings marked with the initials of Dürer, about two hundred, "the greater part of them, though evidently designed by the hand of a master, are engraved in a manner which certainly denotes no very great excellence, and that none are so superior as to challenge a belief that they must be from his own hand; but he goes on to say that, of the cuts of the Apocalypse (published in 1498, five years after the Nürnberg Chronicle, and eight from the expiration of his apprenticeship) generally are much superior to all wood-engravings that had previously appeared, both in design and execution. Yet he adds that, for this superiority in execution does not arise from any delicacy or skill in the engraving, but from the ability of the person by whom they were drawn, and from his knowledge of the capabilities of his instrument. A frequent example is to be found in his cuts of cross-hatchings, a work of no artistic difficulty, though one of minute and tedious labour, and which, as an artist, he could have easily avoided. This argument is also applied to others, Cranach, Burgmair, &c., who, it is urged, could equally have made the cuts of the Apocalypse, if he had done them himself. But, as the art was most likely to have been acquired by practice, a fact that is felt even at present by persons who draw on wood; and it is remarkable that in the Apocalypse the use of cross-hatchings is much more sparing than in many of his later works, in the probability of the advanced in reputation he availed himself of assistance not only in wood-engraving, but in painting and engraving on copper. It is known that he had many pupils, and of course it is supposed that they cut the wood, marked precisely as his engravings on copper are marked, and we think there are thus grounds for supposing that the cuts of the Apocalypse are chiefly from his own hand, and that in the others he at least considerably superintended the execution, and arranged the finishing touches. The writer says there is a difference in the cases of the engravings on copper and wood; that the latter, if the design were transferred, could be executed by a workman of moderate skill, while the former would require a first-rate engraver. From this we dissent; there is much, no doubt, that patient fidelity could successfully copy, but there is much of artistic feeling and expression that none but an artist of great talent could reach: we refer as an example to the Christ taken from the Cross, of which both the drawing and composition I have seen in the possession of Mr. Blackwood, in the third edition of his History of Engraving, and in which the cross-hatching is but sparingly though effectively introduced. It is yet a common practice for engravers to employ their pupils in the most tiresome parts of their business, which might lead him to adopt the cross-hatching more frequently than in those executed by his own hand, in which however he would not altogether omit it, as it was used to give the impression of ink in an impression, which would be harder to eradicate; but in such cases to withhold the merit of the engraving from the master because he had been assisted perhaps by various persons, according to their capacity, under his immediate supervision. This is also Oltley's opinion. He says, "Dürer or Burgmair might have found employment for a dozen young men;" while the Abate Pietro Zani, in his more recent work (Encyclopaedia Metodica critico-ragionata delle Belle Arte, Parma, 1821), contends with great strength of argument for Dürer being actually the engraver of the wood-cuts attributed to him. Indeed the writer whom we are replying to admits he may have engraved them himself, or three or four hands, "but might have had engravers in his house to execute the designs under his own superintendence." But this seems to admit the whole case. Thus much we have thought it necessary to urge in favour of Dürer's claims to be considered as an engraver on wood, though doubts have arisen as to his being an artist to be estimated rather from his other works as a painter, an engraver on copper, and as a sculptor, in all which he excelled. In the history of the art too, the importance of the prints exists, the date of their production is well known, the progress of improvement definitely marked, yet the engravers have been who they might. But in an art that has thus rapidly advanced, and was coming into general use, if the designers and the engravers were distinct, it is not most probable that the excellence of the latter would at least have obtained in some cases a particular mention, as was done in a later stage, and is the practice now.

In the early part of the sixteenth century several of the greatest artists were either on wood or engravers, Louis Cranach, Hans Burgmair, Hans Schaffhausen, Uff Grafie of Berne, and, in Italy, Ugo da Carpi. Their initials or monograms are on the works, but their claims to be engravers have been denied by Bartsch and the writer of the Treatment on Wood-Engraving, as they were wholly insufficient ground of the execution not being good enough. To Da Carpi has been attributed the invention of imitating drawings in chiaro-seuro, effected by single blocks, two of which have been produced, but it has been done earlier by Cranach, though Da Carpi most certainly improved on it, and some of his designs are said to have been drawn on the blocks by Raffaelle himself, and many of them are from his designs. Books were also given as proof of this practice, produced about this time, and the cooperation of those from the artists already named, and very few others of some though inferior merit, the illustrations are very rude both in design and execution. The art was chiefly practised in Germany, being greatly patronised by the emperors of the Holy Roman Empire. The book of Bartsch, The Triumphs of Maximilian, was the only distinguished name out of that empire of the period, and the Italian wood-engravings are, on the whole, even inferior to those produced in the Low Countries.

The most prominent German engraver in all probability was Hans Holbein. He was born about 1498, and began early to distinguish himself as an artist. In 1528 he left Bassi, where he had hitherto resided, for England, having previoudly been instructed. His name is mentioned in the registers of St. Peter's, as he had executed a large full-length likeness of himself in wood, the block of which yet exists in the public library at Basle. The writer in the Treatise on Wood-Engraving says, there is not the slightest reason for believing that he was a pupil at either Dürer or Burgmair; and that he cannot get up his port of his theory, that Holbein never engraved on wood at all, but was merely a designer, as he had previously argued was the case with Dürer and others. This theory is developed chiefly in reference to the first edition of the Dune of Death, printed at Lyon in 1538. There had been several representations of a Dance of Death, some painted in fresco (one in the cloisters of St. Paul, London, and of the time of Henry VI.), and some in books, of which Mr. Deacon has given a list; but those of Holbein are far superior in spirit and expression that have ever been so excelled, though wanting in mere mechanical dexterity, as shown particularly in the foliage of trees and other subordinate details. Mr. Deacon, however denies to Holbein the invention of the designs, as the writer in the Treatise on Engraving denies his being the engraver. The doubt in both cases arises principally from a passage in the dedication to the Duke of Norfolk, and the expression in the preface to the Lyon edition, that it would be hard to demonstrate that Holbein made the cuts. The "death of him who has imagined such elegant figures as are herein contained," adding that Death, "apprehensive that the artist could thus become immortal, determined to shorten his days, and thus prevent his successor from having even a fragment of his work," the unfinished subject is then described, the Waggen, which however was supplied in a subsequent edition, but varying considerably from the descriptions, and not equal either in design or execution to the rest of the original.

WOO
series. Some words seem to apply to both engraver and designer—a finishing subject which he had already drawn. Holbein however did not die till 1564. Again, one of the blocks is marked with the monogram (H.L.) which Mr. Dance considers to be that of the designer, and the writer in the *Treatise* as that of the engraver. Holbein was an artist of high merit as a painter and engravers now, while the author of the ‘Dance of Death’ and other contemporary designs are not distinguished as an architect. Is it conceivable that he would at this period of his life execute the designs of another in an art subordinate to what he actually practised? The same year also, 1538, was from about this time that the publishers, ‘Before the Sonne, and after the Sunne’ were applied to wood-cuts at that time. The number of cuts is thirty-two, of which the first four are the same as in the *Dance of Death,* the remainder being of an oblong form, except one, which is printed in a different type and design, and is ascribed to Sandrart, among others, who was himself an engraver as well as a painter, in his *Teutsche Akademie der edlen Bau-Bild und Mahleren Kannte,* 1673-79, describes Holbein, as well as Dürer and others, as a wood-engraver. With regard to the cut marked ‘Figures of Death, with the names of the four elements’ as the mark of the engraver (whoever he may have been, for it is a contested point), and as little that it marks the cut he engraved as an exception to the rest. The statement of the first cut having been left unfinished may have had reference to the engraver for the block, the second cut having been engraved by Holbein in 1538, late in the year, but for too short a time to have executed them then and there, but they may have been prepared in 1538-3, when he resided at Basle for a short time, or in England, as were the cuts to Tindale’s New Testament bound at Antwerp in 1534; and the frontispiece to Coverdale’s Bible, printed at Zürich in 1535. The unfinished blocks may on either case have remained so from hurry or accident; but at least the statement goes to show that Holbein not only in the execution of the designs himself, but also to finish the subjects he had already drawn. It ought to be borne in mind that at this period artists throughout Europe confined themselves to no one branch; the same individual was painter, engraver, sculptor, and sometimes a printer in his own house, and there was no need to adduce examples. No doubt has been raised that Holbein engraved upon copper; why is it to be now doubted that he engraved upon wood? It is said; the head of Erasmus, the head of Sir Thomas Wyatt, the Bible cuts, all cut by himself, as printer and engraver. ‘Censure the man in his mind, not in his work for money?’ he produces the article for which he is paid. Without knowing every circumstance under which every cut was produced, we cannot decide by the mere rudeness of execution whether they are from his hand or not.

evory case however, there is a certain style, a finessed and freedom of line, an avoidance of all mechanical trick, and a simplicity which characterizes the productions usually attributed to him. We do not suppose indeed that he performed all the labour himself, but that it was done under his supervision, as similar things are done by eminent masters to-day. Mr. Dance in addition, that the capability of drawing well on wood, and adapting the style to cutting, is no slight proof that the artist himself can engrave; and few persons will excel as engravers who are not capable at least transferring a design to the block.

From this epoch the art has continued to flourish. The pupils of Bewick were numerous and possessed of great talent; the celebrity of their master procured them immediate employment. Illustrated works became fashionable, and the engraver, at first very little looked after, was by degrees, and particularly by the example of the *Penny Magazine,* wherein it was proved that a low price was not inconsistent with a high degree of excellence in the art of wood-engraving; and as it was thus brought within the reach of the very
poorest, the public were familiarised with the best specimens, and a large sale was ensured.

For the purpose of illustrating books wood-engraving is principally used. Being worked in the same manner that type impressions are produced with great rapidity. Any number of cuts may be printed at once on a sheet of paper that will come into the press or machine, and an almost infinite number of impressions may be taken off without material injury to the plate. This produces the copper plate art. The attempts which have been made to imitate the effects of copper-plates are misapplied, and the advantages have been failures. The extreme neatness, length and sweep of line, and bold outline of the copper cannot be re-created in wood-engravings, while in depth of shadow and effect they equal even mezzotint, with more distinctness of detail.

It is not necessary to detail the history of wood-engraving beyond this period, as many of Bewick's immediate successors are yet living, through the mistake that it is difficult to conceive that a higher degree of perfection can ever be attained than that now realised by our present artists, while the designs are frequently furnished by artists of the highest eminence. Within the last few years also the wood-engravers of France, and also of Germany, have made such progress in improvement as to become no contemptible rivals of their English brethren. Nor is it any part of our plan to give practical instructions for engraving, which can be more effectively performed by instruction in practice. A description of the process as practised in his time is given by Papillon, in his 'Traité de la Gravure en Bois,' 1766; and a far more detailed account, with all the modern improvements, by Mr. Jackson, in the 'Treatise on Wood Engraving,' already mentioned. It may serve that one of the greatest practical improvements, that of lowering the surface of the blocks in parts, so as to gradually shadow the lights, was, though not invented, yet brought into use by Bewick, nearly all his blocks being so prepared for engraving; and that his wood is now universally used for engraving upon.

(Ottley's Inquiry into the History of Engraving on Copper and Wood; Singer's Researches into the History of Playing-Cards; Treatise on the History of Wood-Engraving, with upwards of one hundred Illustrations, engraved on Wood by John Jackson; Heineken, L'Idée Générale d'une Collection complète des Cartes.)

WOODYALL, William, was the son of the printer and proprietor of the 'Public Advertiser' newspaper; another son, we believe the elder of the two, was Henry Sampson Woodyall, who succeeded his father in the management of the paper, and held it when it became the means by which the letters which the letters of Junius were given to the world. William was born in 1745 or 1746, and began life by being sent to learn the printing business under Mr. Baldwin, of Paternoster Row. He was then employed for some time in assisting his father in printing and editing the 'Public Advertiser,' and that time for the first time his abilities were noticed, though not possessed of him, that he broke away with a company of players on an excursion to Scotland to gratify that passion. While in Scotland he married, but returned to London about 1772, when he was first employed for a short time as editor of a newspaper called 'The London Packet,' and then undertook the direction, both as editor and printer, of 'The Morning Chronicle.' With that paper he remained connected till 1779, when he left it and set up one of his own, which he called 'The Diary.' Before the close of 1780, he had published an 8vo. packet of 'Psalms,' (prior 36. ed.) a Sketch of the Debate in the House of Commons in Ireland upon the rejection of the twenty commercial propositions; but it was in 'The Diary' that he first gave public notice of an attack on the subject of the separation of the press, and pursued his readers with as detailed accounts of the parliamentary debates on the day after each took place, as the other papers had been in the habit of supplying after an interval of many days; for the practice then was to give them in summary in an alphabetical manner, and to add the full speeches till the reports of them could be prepared at leisure. Woodyall's mode of proceeding was what would now be thought very extraordinary. 'Without taking a note to assist his memory,' says the notice of him in the obituary of the newspaper in which he was employed, 'he would sit at his table and tell his readers, without the use of a memorandum to ease his labour, he has been known to write sixteen columns, after having sat in a crowded gallery for as many hours, without an interval of rest.' This exercise however, it is added, in which he took pride, and which brought him more praise than profit, 'was done with a firmness, which was marvellous good; and when done, by the division of labour, produced the most perfect reports of debate, with an earlier publication, he yielded the contest, and suffered his 'Diary' to expire.' In his later years he offered himself a candidate for the office of Otterton. Before embracing it, however, he married Mrs. Wood, became an actor, and also wrote several novels.

(Annual Register, vol. 45.)

WOODFORD. [Eccle.

WOODBUSH, Robert. There is almost a real silence concerning this printer, who was formerly attached to the office of The London, but who after that he became editor of the Gentleman's Magazine. He died in 1758, and was succeeded by Dr. Scott, the editor of the Gentleman's Magazine.

Robert Woodhouse was born at Norwich, April 3 1773. His father was in business in that city, where he was one of the principal printers, and possessed a considerable library of some antiquity, and claimed and sought to recover a seat at Eton, in the possession of Lord Byron, as the uncle of the poet. His mother was the daughter of Rev. J. Alderson of L.-westoffe, who was the great-grandfather of Bishop Heywood. He was educated at Eton, and afterwards at Cambridge, and in 1795. He gained a fellowship at an college (i.e. the fellows, or most of them, may continue laymen), as the concerns of the College and University, with his wishes to private pupils, and turned his attention to be a professor of mathematics; and in 1822 was removed to the Plimian professorship of astronomy and experimental philosophy, vacant by the death of Dr. Vince. In 1823 he was married Harriet, the sister of William University, R.A., the president of the Royal Academy, and to whom he dedicated his 'Life of Lalande.' In 1824, when the Observatory was completed at Cambridge, he was appointed to be its superintendent; but by this time his health had failed, and he was hardly equal to the extent of his duties. He left Lalande in 1827, and was buried in the chapel at Caius College.

Woodhouse is distinguished as the first who, in his University, cultivated the methods of analysis which the genius of the Continental mathematicians had made so much of. The last was exclusively taught in England at the time when he graduated. He was the first who introduced the method of analysis into a work (or at least published) for the English student, and he must therefore be considered as the leader of the movement by which the mathematicians of this country assimilated their methods to those of their Continental brethren. For this position he had perfect qualifications: a profound and extensive knowledge of every stage of the progress of all that he studied. The last work he published, at the age of 82, was a treatise on the elements of analysis. To these we must add a high personal character, and the esteem of his contemporaries;—the consequence of the utmost consequence to a literary reformer. His style of writing is peculiarly his own, frequently difficult to understand, and frequently wanting in the modern mathematician, a perfect absence of discipline; ability to see that much of his importation was as inferior in accuracy as it was superfluous, and, in an age so much given to expediency, to introduce a new and different form of amendment. To these we must add a high personal character, and the esteem of his contemporaries—qualities which make out a meaning, Woodhouse is a favourite name;
still more so with those who like to think about the first principles of their subject. But to those others who pour intellectual fervour and understanding there is a sort of metaphysical symbolism which they have made out as an author as soon as they see how his sentence runs, he is regular; and still more so to those who are rather bent upon using mathematical symbols than understanding them.

We do not mention his papers in the 'Philosophical Transactions,' as their principal points are repeated in his separate writings, which are as follows:

1. 'The Principles of Analytical Calculation,' Cambridge, 8vo., 1803. In this work, which is rather of the descriptive and controversial than of the elementary character, the method which is well known as that of the language and first principles of the Continental analysis, with strong recommendation of the former, and a searching criticism on the latter. He passes under review the method of infinitesimals, limits, expansions, &c., and the total insufficiency of the method of Lagrange [Poncelet, Tirony op], and gives his own views of the mode of establishing the differential calculus. He had evidently, as often happens to those who strictly investigate received facts, been an original thinker, and had a talent for and an ability in the use of the possibility of any rigour at the outset, at least an instinctive habit of objection. Though differing from several of his positive conclusions, particularly those which he comes to on the character of the theory of limits, we must always see in him an independent thinker indeed in which he is so individual as to distinguish the work throughout. Considering the time and place at which it was published, it is a rare instance of enterprise in the choice of a subject and of the manner of treating it.

Of the other qualifications of a controversialist, Woodhouse had a power of sarcasm, which, though in private life it only went the length of what is called 'dry humour,' yet appeared now and then in his writings in a manner which would have made an opponent careful what he said, and a friend blush at the expenses he incurred in the production of greater merit, and such as is not likely, notwithstanding the crowd of similar publications in the present day, to be specially superseded in the business of education; and, as some subjects are, well calculated to fix strongly the attention of the student, and to make him reflect attentively upon the particular processes which are followed, and upon the reasons for their adoption. The 'Analytical Calculations' was an exception in this respect, and was addressed to the student. It excited the opposition of those who were attached to the old system, and paved the way for the subsequent introduction of the differential calculus, the works on which must have been accompanied by treatises to show them to themselves, if Woodhouse had not supplied the want.

S. 'Elements of Trigonometry,' Cambridge, 8vo., 1809 (several subsequent editions). Of this work Dr. Peacock says that 'more than any other contributed to revolutionize the mathematical studies of this country. It was a Nemesis to the science, and led to a period of original study, which produced a new way of looking at it, and of discussing it. It had the effect in the study of mathematics, of great merit, and such as is not likely, notwithstanding the crowd of similar publications in the present day, to be specially superseded in the business of education; and, as some subjects are, well calculated to fix strongly the attention of the student, and to make him reflect attentively upon the particular processes which are followed, and upon the reasons for their adoption. The 'Analytical Calculations' was an exception in this respect, and was addressed to the student. It excited the opposition of those who were attached to the old system, and paved the way for the subsequent introduction of the differential calculus, the works on which must have been accompanied by treatises to show them to themselves, if Woodhouse had not supplied the want.

3. 'A Treatise on Isoperimetrical Problems, and the Calculus of Variations,' Cambridge, 8vo., 1810. There is something peculiar to himself in every work which Woodhouse produced. The mode of writing scientific history, which Delambre afterwards adopted, is here for the first time: it consists in taking up the subject in such a manner that its history in the hands of each individual is separate from the rest; accordingly, the method of tabulating the names of the author, the year of its preparation, its promoter, and its connexion with it. Woodhouse puts distinctly before the reader the very problems, methods, and notation of the several writers on the calculus of variations, from the first original writers down to the most recent. To this end he has supplied a table of the names of the authors, the title of their works, and the date at which they were published. The book will not pass away like an elementary work; it is a history.

4. 'A Treatise on Astronomy,' Cambridge, 8vo., 1812. The first two volumes of this work, which was published in 1818, is on the theory of gravitation, which is somewhat improperly called Physical Astronomy. But in the subsequent editions the first volume was enlarged into two, which were obliged to be called parts; so that we must now consider each as being divided into two. The first part, in which the scientific element introduced as an hypothesis, and the second, in which physical astronomy, or the theory of gravitation. Of the latter it is only necessary to say, that it was the first work in which the student was introduced to what had been done abroad since the death of Newton, and that it does not retain its place only because the subject has advanced both abroad and at home. But the first volume still remains perhaps the most remarkable work on astronomy of its century. This distinction it owes to the manner in which Woodhouse makes the reader feel that he is in the very observatory itself. The methods are as perfect as if they had been directions to a computer, a quality which writers who have to explain those methods mathematically frequently do not give them; the examples seem as if they were real ones, as if some astronomer had had to put down the actual figures, and the very observations may be thought of as if they had been taken while the astronomers which gave them. Many theoretical works on astronomy may make a reader think he would like the practical part of the science, in which he may afterwards find himself mistaken; but Woodhouse's treatise cannot deceive him in this respect; he will or not rely partly from according as he is or is not pleased with Woodhouse's book. At least the preceding is more true in the spirit book than of any other. The secret was, that the sense of his subjects, his reputation as an original thinker, and his first place with the student in an unusual degree. He was very fond of the subject of practical astronomy, a taste which is not always found in the mathematician, and so he was able to form a system of the whole of the work, a system which before the failure of his health, he would probably have become as distinguished in the promotion of astronomy as he was in its explanation: as it was, he had only time to discover [Transit, p. 124] the enormous effect of the diagonal branches of the transit instrument.

The character which must be given of the several writings of Woodhouse entitles us to suppose that the revolution in our mathematical studies, of which he was the first and most active agent, would not have been brought about so soon if its earliest advocacy had fallen into less judicious hands. For instance, had he not, when he first called attention to the continental analyses, exposed the unsoundness of some of the usual methods of establishing it more like an opponent than a partisan, the change which would have probably have made a successful stand against the whole upon the ground which, as it was, Woodhouse had already made his own. From the nature of his subject, his reputation as an original thinker, and his first seat in the world at large: but the few who can appreciate what he did will always regard him as one of the most philosophical thinkers and useful guides of his time.

WOODHOUSE, LORD. [TYLER, A. F.]

WOOD-LARK, Alauda arboea. Although this resident is not plentiful in Great Britain, it is scattered generally over the British Isles. Its length is about six inches, and its plumage a good deal resembles that of the Skylark, the head of a reddish-brown, and the breast of a greyish-white. Montagu well describes its habits. 'It sings,' says he, 'delightfully on wing; describing its flight in widely extended clycles, and pouring out its song a whole hour without intermission; it rarely utters its song when sitting on the ground, though sometimes when perched on a tree. The song is much more melodious than that of the Skylark, but does not consist of so great a variety of notes; but then it sings almost throughout the year, except in the months of June and July. It does not mount in the air in a perpendicular, but always soars to a great height, and keeps flying in large irregular circles, singing the whole time with little intermission; no other song has such an effect. The nest, which is early formed, for the Wood-Larks begin to build in March, is made of dry grass with a finer lining of the same, and a few hairs, on the ground, generally in uncultivated rough land, and mostly sheltered by bushes or thickets, or sometimes on a rock or cliff. The four or five eggs are brown, with dusky and mottled, most numerous at the large end. The Wood-Lark is rare in the North of England and Scotland, and has not been noticed in Shetland or the Orkneys. It visits Ireland in the summer, but is permanent in Germany, Holland, France, Spain, and Italy. The species is common in Sardinia, according to Mr. Strickland.'
It is the Lulu of the French; Tuttullina and Tuttavella of the Italians; and Baumlerche, Waldlerche, and Haidelerche of the Germans.

**WOODPECKERS, Picidae, a family of Scansorial birds.** (Scansores.)

The order Pici of Linneus is thus characterized:—

*Bill (cuneus sarrii) cultivated, with a convex back. Feet walking, short, rather strong. Body 'tenuisculum,' impure. Food 'quiulicium.' Nest in trees; the male feeding the incubating female; Monogamy. Order analogous to the Primates.*

This order seems to be the most arbitrary in the ornithological system of Linneus; for under it birds of very discordant habits are collected. The Woodpeckers, the Cuckoos, the Kingfishers, the Humming-Birds, are together associated with others in the following succession:—

**Picidae**.

Bill subcompressed, convex.

Genera:—Picus with its three sections; Ramphastos; Buceror; Buphaga; Crotophaga; Corvus; Coracias; Oriolus; Gracula; Paradisa; Trogon; Bucco; Caculus; Yunz; Picus; Sitta; Todus; Alcedo; Merops; Upupa; Certhia; and Trochilus.

The previous arranged the Wryneck, the Woodpeckers, and the Jacamar in the first section (Bill straight) of his thirteenth order of Birds—those, namely, with four toes, two before and two behind.

Latham's *Picidae* consist of even a more heterogeneous group, which he arranged under the general name of Picus of Linnaeus.

The fourth order of Birds, in the Method of Lcæpède, consists of those which have the bill straight and compressed, and under it two genera only, Galbula (Jacamar) and Caculus. The Count's third and fifth orders are formed respectively of the genera Bucco and Yunz.

The first family (Camerostes or Sphenorhamphes) of M. Dunéni's third order (Grimpeurs or Climbers) comprises the genera Picus, Yunz, Galbula, Crotophaga, and Caculus.

*The Pic i form M. Meyer's third order, and are divided into two sections:—*

1. With stiff feathers. Genera:—Picus; Certhia.
2. With soft feathers. Genera:—Yunz; Sitta; Tichodorus.

Illiger's *Scansores* consist of the *Picatini;* the *Serrati;* the *Amphiboli;* the *Sagittilungues;* and the *Syngactylsi.* The *Sagittilungues* embrace the genera Yunz and Picus.

The great genus Picus is placed by Cuvier in his third order, *Grimpueurs,* unlike Galbula and Yunz.

The *Syngactylsi* are the first tribe of the *Syngactylsi,* the second order of Birds according to the method of M. Vieillot; the second family of that order, the *Macrogrumii* of the genera Picus and Yunz.

The *Syngactylsi* are the fifth order in M. Temminck's arrangement; and the genera Picus, Galbula, and Yunz constitute the second family of that order.

The Cuckoos and the Woodpeckers form the *Syngactylsi* of M. de Blainville.

Mr. Vigors, as we have seen, separates the Parrots and Woodpeckers from the other families of *Scansores,* associating them together in consequence of their affinity in the essential characteristics of the tribe, and, in his view, they compose its normal groups, as clergiers par excellence, differing however as to the mode in which they climb: the Parrots using the foot chiefly in grasping the object which assists them in their ascent, and in conjunction with the bill; whereas the *Picatini* rely upon the strength and straightness of the hind toes in supporting them in a perpendicular position on the sides of trees, in which posture they are also assisted by the strong shafts of the tailfeathers. Not that some of the *Picatini* do not partially assist in supporting themselves as they climb, in a corresponding manner with the Woodpeckers, for Mr. Vigors makes the remark that they do, particularly *Picatus and their congeners,* from his own observation. The tongue too, he states, peculiar to the *Parrots,* may be observed to become slenderer, and, as has been said, more extensible, in that group of which *Picaus aterrimus,* Gm. is the representative; thus evincing, Mr. Vigors adds, an approximation, slight indeed, but still an approximation, to the bill of the Woodpeckers.

Mr. Vigors recognised in the Linnean Barbers a group apparently intervening between the *Picatini* and *Picidem,* and diminishing the distance that exists even in the form of the bill. That important group, to his evidently exhibited the expected gradation in the structure of that member; the bill of *Pogonias* approaching nearly that of the *Parrots,* by its short, strong, and beak-like conformation, to say nothing of the frugivorous habits of the *Barbet,* while the straighter and more lengthened bill of the true *Bucco* united itself to that of *Picus,* in other particulars in form, and also an extraordinary formality in colouring, still further pointed out the close and he was at length confirmed in his conjectures regarding the situation of these birds, by arriving at the knowledge of their habits being actually those of the Woodpeckers, and of their chief affinity being the group. Thus Mr. Burchell, in his interesting "Travels in Africa," mentions a little noisy *Barbet* (*Pogonia Bucico nigri,* Gm.), which the Hottentots call *Kepper* (Woodcutter) from the noise it makes in the tree.

The attention of Mr. Vigors was first called to the peculiarity in the manner of the *Barbet* by Mr. Swainson, to whose friendship, he states, he is indebted for much valuable information in his inquiries into the affinities of birds on his travels. Mr. Legros, during his regular graduation by which *Picatini* and *Picidem,* united in their general characters—and those the characters most prominent and typical of their own tribe—and also united in their minute peculiarities, is indebted to Mr. Vigors for these still more corroborative proofs of the interrelations these birds between the *Parrots* and *Woodpeckers.*

Mr. Burchell also entered into a detailed account of the affinities, before a meeting of the Zoological Club of London, of September 1809, and the 1st of October, from his observations during his travels. The regular graduation by which the *Picatini* and *Picidem,* united in their general characters—and those the characters most prominent and typical of their own tribe—and also united in their minute peculiarities, is indebted to Mr. Vigors for these still more corroborative proofs of the interrelations these birds between the *Parrots* and *Woodpeckers.*

"We are thus," observes Mr. Vigors in continuation, introduced to the family of *Picidae,* a very important and well-defined group, both in manners and general appearance. If it is composed of a group of *Pogonias,* III.; in some species of which the sexes are gradually lost, or rather changes into the entire bill of some of the shorter-billed species of the true *Bucco,* that succumbed. The bills of these again lengthened, and nearly assimilated to that of the *Picus,* which comprises the greater portion of the family. A group of these, represented by the *Podastrum,* Linn., in which the shafts of the tail-feathers are soft and flexible, unlike those of the genuine *Picatini,* seems to reach round again as the *Parrots* generally commence. To these also the well-known genus *Linn.,* appears to be related. Mr. Vigors then refers to the strong affinity between the *Picatini* and the succeeding group of *Certhiadea* (Cranes),

*Affinis.*

Mr. Vigors then proceeds to the Orders and Families of *Sau- a.

The *Progothides* of M. Latreille are arranged between the *Cuculides,* and the *Grandiostrides* (Toucan Aracari); the *Progothides* consists of the genera *Pico, Picidas, and Picus.*

In the Method proposed by M. de Blainville in 1812 and 1821, and developed by M. Lhernard in 1827, the *Woodpeckers* (Picus) stand between the *Toucan and the Hoopoe,* in the first subclass of the *Aves.*

In the Project of M. Lecommon, the *Picidas* comprise the genera *Yunz,* *Picidas,* and *Picus,* and are placed between the *Cuculides,* and the *Ramphastides,* forming the fourth family of the first tribe (Syngactylsi of Java);

Mr. Swainson is of opinion that the structure of the *Picidas* constitutes them the most perfect of all the climbing birds, for nature has rendered them wholly subservient to this particular power. The toes, services, although very short, are unusually strong; the nails are broad and crooked, and the toes placed in such a manner that, is, two forward and two backward.
As an additional and powerful support in their rapid and perpendicular ascent up the trunks of trees, their tail-feathers, he remarks, terminate in points, and are uncommonly hard, so that being pressed against the bark, they aid the bird in its progress or in keeping its position. The bill is pointed for the labious operation of penetrating the wood or stripping off the bark of forest-trees, is beautifully adapted for the purpose, being wedge-shaped, furnished with regular-sided angles, and in one species (Picus principalis), nearly of the colour and consistency of the ivory-billed Woodpecker. Mr. Swainson then calls attention to the worm-like tongue barred at the point, and capable of being protruded to a great length.

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Mr. Yearrell observes, that another anatomical peculiarity remarkable in the skeleton of the woodpecker, but admirably adapted to the habits of the bird, is the small size of the keel of the breast-bone. Moderate powers of flight, says this observing zoologist, sufficient to transport the bird from tree to tree, are all that it seems to require; large pectoral muscles with a deep keel to the breast-bone would to this bird be an inconvenience. The advantage of a narrow shallow keel is immediately apparent, on looking at a representation of the skeleton in a climbing position; the low keel, allowing the bird to place its body close to the tree, brings its centre of gravity in a perpendicular line before the points of support, and thus materially diminishes the labour of, and the strain upon, the muscles of the legs and thighs. The descending position of the bones of the tail indicate the mode by which the stiff points of the tail-feathers are brought into contact with the surface of the bark of the tree to form an accessory prop. (British Birds.)

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In the opinion of Mr. Swainson the divisions of this family are strongly marked, because, as some few intervening forms are wanting, the circle is, in one sense, incomplete. Thus the Nuthatchers (Sittae), he observes, although clearly approximating to the Woodpeckers, are not directly united to them; neither does the intervention of the Wryneck, with its worm-like tongue, or even a small aborn, with its acute bill, do more than indicate the broken links of the chain. The absolute connection between the true Woodpeckers (Picinae) and the subfamily of Barbits (Buccininae) he thinks, unquestionably established by two very singular little birds, one being the Sturno Woodpecker of Lathamus (Chelumna, Scz.), the other a Barbit (Picinnus, Temm.).

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The true Woodpeckers (Picinae, Sw.) are, Mr. Swainson observes, typically represented by the great ivory-billed species already noticed. The upper and lower edge of the bill in this bird exactly correspond. He remarks their inclination towards the tip, rendering the organ perfectly straight wedge. The construction of the bone out, rendered still more perfect by a ridged, narrowly crenated hard, and is situated nearly half way between thick and
ternal margin of the upper mandible. Mr. Swainson then draws attention to the crests in these birds—short, rigid, and turned upwards; but their chief generic distinction rests, in his opinion, on the structure of the feet, the hinder external toe being manifestly longer than that in front: this peculiarity, he observes, even extended to such aberrant species as have one of the small toes wanting. In the two northern species, Atsphenus iridifrons and A. arcticus, for instance. To this group therefore he restricts the generic name of Picus, which includes in his arrangement all the British species excepting viridis.

In the next group, Christophorus finds a diminution of the typical excellences; the bill, as in the Common Green Woodpecker, is still nearly straight, but the lateral ridge is close to the culmen, and the hind-toe is either of equal length or slightly shorter than the fore-toe: the crest, though more rigid, is less massive and not so much developed. Mr. Swainson remarks that the colours of these birds are always gray; green and soot-black predominate, and most of the typical species have the quills of a beautiful golden hue, whence the generic name above stated.

Dolichonyx is distinguished from Malacophus by the greater curvature and compression of the bill, and by the disappearance of the ridge on the upper mandible; thus, in Mr. Swainson's opinion, assimilating the group to the Tenenures, and exhibiting the weakest structure amongst the Woodpeckers.

Melanerpes, Sw., the fifth and last genus, may, Mr. Swainson thinks, be not unaptly called Swallow Woodpeckers, for they resemble those birds in their migratory habits, the broadness of their wings, and their black glossy plumage, destitute in the typical examples of spots or bands. Yet, continues Mr. Swainson, 'here we find nature has begun to return once more to her original type: the ridge on the bill is again apparent, at first but slightly, but finally very distinct; this menu, however, though not stride, is less arched than in Colaptes; the two greater toes are of equal length; the wings long and pointed; and the third quill equal or longer than the fourth; the black and white plumage, seen only in the typical genus Picus, is again assumed, the two lateral toes of the upper mandible is as in the last genus; but the anterior toe is longer than the hind-toe; the crest is long, formed of loose feathers, and, like the rest of the plumage, particularly soft; hence the generic name.

Galeus is distinguished from Malacophus by the greater curvature and compression of the bill, and, by the disappearance of the ridge on the upper mandible; thus, in Mr. Swainson's opinion, assimilating the group to the Tenenures, and exhibiting the weakest structure amongst the Woodpeckers.

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the margin of the upper mandible distinctly toothed. (Africa only.)

Yunx. [Wayneck.]

Oxyrhynchus.

Generic Character.—Bill as in Yunx, but the culmen more and the gwyns less curved. Wings lengthened, pointed; the first quill nearly as long as the second, with the outer web crested. Feet short, inessential: lateral toes equal. Tail moderate, even. (South America.)

The Picidae, in Mr. Swainson's arrangement, are placed between the Piculidae and the Certhiidae.

In the Geographical and Comparative List of the Birds of Europe and North America, by the Prince of Canino and Musignano, the Picidae, which are arranged between the Piculidae and the Certhiidae, consist of the following subfamilies and genera:

a. Picinae.

Genus Yunx. Mr. Gray places the Picidea (Picus, Linn., and Bucco, Linn.), his third family of Scansores, between the Piculidae and the Certhiidae. Mr. Gray's Picidea include the following subfamilies and genera:—

1. Buccoine.


2. Picine.

Genus Picinus, Temm.; Micropterus, G. R. Gray; sieia, Hodg.; Siria, Hodg.

3. Picidera.

Genus Picisdes, Lape.; Hemiscirus, Sw.; Campebuthus, G. R. Gray; Dendraboras, Piss., Picus, Linn.

4. Dryocoleine.

Genus Dryocopus, G. R. Gray; Dryocopus, Sw.; Xylocopinae, G. R. Gray; Xylocopinae, Sw.; Melanopera, Sw.; Tripsurus, Sw.

5. Celenina.

Genus Cecinus, Boie; Hemilophus, Sw.; Celenus, Boie; Metopistes, Sw.; Tiga, Kaup; Brachypterus, tricki.; Centaurus, Sw.; Leucopera, Sw.

6. Colapinina.

Genus Colaptes, Sw.; Gecolopus, Bureh.

7. Yunicina.

Genus Yunx, Linn.

Eurasian Woodpeckers.

Examples.—Picus martius, Linn. (genus Dryocopus, sieia; Dryocopus, sieia; Dryoscoenus, sieia; Dryocopus, sieia; Dryococcus, sieia; Dryococ
tend to propel it forwards. This provision, the more needed from the posterior situation of the legs, is admirably calculated for ascending; and having explored the bank by a spiral course, the woodpecker flies off to the next tree to repeat the same process. The flight of the present species is undulating, seldom protracted to any extent, but limited to a transit from tree to tree in the seclusion of its native woods. Its food consists of the larvae of wags, bees, and other insects; in addition however it devours fruits, berries, and nuts with avidity. The female selects the hollows of old trees, in which she deposits two or three eggs of an ivory whiteness.

Mr. Hewitson saw this species in two instances only in Norway, and at a distance. The birds were so wild that to approach them was impossible. The same observing ornithologist says that on the wing the Black Woodpecker looks like a crow, and that its notes resemble a loud hoarse laugh.

The Great Black Woodpecker (Dryocopus martius).

*Description*—Male.-Top of the head, occiput, and moustaches brilliant red; face black, upper yarls a beautiful green; rump tinged with yellowish; quills regularly marked with whitish on their external bars; tail shaded with brown and striped transversely; base of the lower mandible yellowish; iris white, feet greenish-brown. Total length about thirteen inches.

*Female* with less red on the head and less black round the eyes; the moustaches black.

The Young of their departure from the nest have a little red upon the head, the rest yellowish ash-colour; all the green paler, and marked on the back with ash spots; the moustaches formed by some black and whitish spots; the rest of the lower parts greenish white with tawny brown bands; iris blackish ash.

*Varieties.*—Pure white with the head yellowish; its plumage of a dusky tawny, with the tail much tumbled; often more or less variegated with white.

This is the Pic verd and Pic vert of the French; Picus verus, Picchio verde, and Picchio polosco of the Italian; Grünspecht, and Fichter, Sand, Griener und Grünholz of the German; Gröngökling of the Swedes; Grosneet of the Danes; Norwegian; Deteau and Deteta of Scopoli; Green Woodpecker or Woodpige, Rain-bird, Rain-fish, Nibbe, Hubber, Howkole, Birt Bird, Pick-loh, To:ppinage, Vlug, Til, Yoffter, Woodcule & Whet-le, Poppiney, and other names given by the modern British; Gumell y coed and Dein y dera the antient British.

Below seems to confound the Great Black Woodpecker and the Green Woodpecker; his description and tags indicate the latter, but over the cut in *L'Histoire de Nature des Osyaxes* (folio, 1555), he writes Dryocopus, Pipra, Pipo, Chlorous en gree, Picus martius major, Picus roseus et arborum cavator en latin, Picus nit, ou Pic taulie en Franygo, and below he gives description of the Dryocopus (Dryocletes) from the ninth chapter of the ninth book of Aristotle *Hist. Anim* where the Greek zoologist states that Dryocopus does not perch on the ground, but strikes the oak or the walnut to break and insects (insects, he means the Green Woodpecker frequently hatches on the ground) to the purpose of feeding on them. In the *Pomme Osyaxes* &c. (4to, 1537), over the same figure, Dryocopus, L'Ornithologue des Laitiis, Picus maritus. Picus scolarius, Picus verus, Picus luteus, Picus niger, Picus martius, Picus taulis, Picus iner, Picus martius ou Picart, Pic verd, Pic taulis, Picmart; and below—

*Le Pic verd (mais) a la Turrette et done, au lieu de Corbeau et au rouge Pic verd.*

*Les autres, le Plumage est de brun, et ses petits on un trou d'afeur en beure.*

Further observations relating to the Woodpecker to the antients will be found at the end of this section.

**Geographical Distribution.**—The European Woodpecker is but not common in Holland, from Scandinavia and Russia to Spain, Provence, and Italy; the woodpecker of Greece, England and Scotland generally, where the species is rare. Not recorded as having been found in Ireland.

**Habits.**-Food, &c.—This species obtains its nourishment on trees and on the ground; its flight is short, quick, and rather laborious. When seen moving about, Mr. Yarrell says, its motion is directed forward or less obliquely, and is believed to be capable of descending unless this action is performed forwards. On flying to a tree to make a new nest the bird settles down on the bough or body of the tree a few feet above the ground, and generally chooses the lowest large branch, as if to have all its work at hand, proceeds from thence upwards, alternately tapping to induce any hidden insect to change its place, pecking in a decayed branch, that it may be able to reach sects that are lodged within, or procuring its long flexible tongue to take up any insect on the surface; but summit of the tree once obtained, the bird does not scend over the examined part, but flies off to another or to another part of the same tree, to recommence search lower down nearer the ground.

A very large proportion of the food of this species is derived from ants and their eggs. Every person who has lived in the country must frequently have seen the coloured woodpecker on its nest at some time or other. Mr. Yarrell states that he has seldom had an opportunity of examining a recently killed specimen, the beak of which did not indicate by the earth adhering to the base, and the feathers about the nostrils, that the bird had much forage at work. Bechstein says that in the latter part of the season the bees from the hive, and that unless it is fed on ants' eggs, and meat. Of its manners in captivity the German ornithologist says that the beauty of its plumage is all that can be said of it; for it is so foamy, quarrelsome and stubborn, that it can only be kept chained. In captivity he adds, to see it crack nuts, and eat the meal provided, is associated with enjoyment; and so differently has the nut been eaten that the Nutcracker has been placed near this bird.

Buffon laments over the hard lot of this bird, always condemned to labour for its existence, and bears in it all those laughing cry exclamations of wretchedness, which so much can hardly be unhappy while obeying an instinct which is associated with enjoyment; and so differently has the nut been eaten that the Nutcracker has been placed near this bird.
The nest is generally formed in an elm or ash tree, and when the birds are excavating the hole on which they have pitched for its place, they are said to carry their chips to a distance, for fear their presence on the spot should lead to discovery. The eggs, which are smooth, shining, pure white, are deposited on the bare loose decayed wood, and are from five to seven in number.

Besides the laughing note, which is repeated more frequently and loudly before rain, a low jarring sound is uttered by the adults, and is supposed to be a sexual call. Mr. Yarrell states that the young are fledged in June, and creep about at a short distance from the hole where they were hatched before they are able to fly, and that he has known the young birds taken from the tree and brought up by hand to become very tame and utter a low note not unlike that of a young gosling.

After the first moult the red on the top of the head disappears, to give place to the black; and the occiput, which is black in the young, becomes red in the adult males. By this peculiarity in the change of the livery the species is easily distinguished from those of _Picus leucogaster_ and _Picus medius_.


**Geographical Distribution.**—Extensive, more so, perhaps, than that of any other European Woodpecker. Denmarks Norway, Sweden, and Russia, Europe generally to Italy inclusive. Common in Scotland and Ireland. England, (rarer northwards), Scotland, Ireland.

**Habits.**—Food, &c.—Mr. Gould observes that the group to which this species belongs, although they occasionally depend to a great degree, and are also known and studied their habits and manners as the Great Woodpeckers represented by the _Picus viridis_, _caniceps_, and several others from the Himalaya Mountains. 'They exhibit,' says Mr. Gould in continuation, 'great dexterity in traversing the trunks of trees and in the large decayed limbs in quest of larvae and coleopterous insects which lurk beneath the bark, and to obtain which they labour with great assiduity, disengaging large masses of bark, or so disturbing it by repeated blows as to disarray the objects of their search. Besides searching for the grubs of the higher glade is observed to alight upon rails, old posts, and decayed poles, where, among the moss and vegetable matter, they find a plentiful harvest of spiders, ants, and other insects; nor are they free from the charge of plundering the fruit-trees of the garden, and in fact commit great havoc among cherries, plums, and wall-fruit in general. Their flight is rapid and short, passing from tree to tree, or from one wood to another, by a series of undulations. In their habits they are shy and reticent, and so great is their activity among the branches of trees that they seldom suffer themselves to be wholly seen, dodging as so to keep the branch or stem between themselves and the observer.'

**Birds of Europe.**

The editor of Pennant's _British Zoology_ states that this species puts the point of its bill into a crack or the limb of a large tree, and makes a quick tremulous motion with its head, thereby occasioning a sound as if the tree was splitting, which alarms the insects and induces them to quit the recesses: this, the editor says, it repeats during the spring in the same spot every minute or two for half an hour, and will then fly to another tree, generally fixing itself near the top for the same purpose. The noise, he adds, may be distinctly heard for half a mile, and he remarks that the bird will also keep its head in very quick motion, while moving about the tree for food, jarring the bark, and shaking it at the time it is seeking for insects. Bechstein says, that the food of this species consists of insects, beetle-mast, acorns, nuts, and the seed of pine and fir, and that in order to crack nuts, it fixes them in the elets of the trees. Temminck makes the food to consist of 'hametons (Melolonthae), bees, grasshoppers, ants, perforating and other larvae.'

The eggs, which are glossy-white, and from four to six in number, are deposited at the bottom of a hole in a tree upon the decayed wood.

Montagu gives a strong instance of the pertinacity with which the female remains at her duty. It was with difficulty that the bird was persuaded to quit her eggs; for notwithstanding a chisel and mallet were used to enlarge the hole, she did not attempt to fly out till the hand was introduced, when she quitted the tree at another opening. Montagu further states, that this species more frequently makes its nest in the woodpeckers are distinguished, than either of the others, especially when disturbed from the nest, as he had
an opportunity of observing on the occasion above mentioned. 'As soon,' continues he, 'as the female had escaped, she flew to a decayed branch of a neighbouring tree, and there began the jarring noise before-mentioned, which was soon answered by the male from a distant part of the wood, who soon joined his mate, and both continued these vibrations, trying different branches, till they found the most sonorous.

It is an observation of Mr. Selby's, that scarcely a year passes in Northumberland without some of these birds being obtained in the months of October and November. This induces him to suppose that they are migratory in some of the more northern parts of Europe, perhaps in Norway and Sweden. They arrive, he remarks, about the same time as the Woodcock and other equatorial migrants, and generally after stormy weather from the north or north-east.

The favourite localities of the Greater Spotted Woodpecker are large woods and well-timbered parks. It has been seen, but not so abundantly as the next species, in Kensington Gardens.

Pennant and others have placed the Middle Spotted Woodpecker, Picus medius, among the British birds; but there is no safe record of its having been ever seen in this country. The mistake has arisen from the capsus being the crimson-headed portion of the Greater Spotted Woodpecker to be the Middle Spotted Woodpecker, which, when in perfect plumage, has the top of the head red. The last-named species is now withdrawn from the British catalogue.

The Greater Spotted Woodpecker, Picus major, Linn.

Description.—Old Male.—The whole of the forehead, region of the eyes, sides of the neck, and under parts, a light rufous white; five longitudinal black lines on the face, two on each side; and the top of the head and upper part of the back and wings black; on the rest of the under parts black and white bands; a black hand goes for the angle of the bill on the sides of the neck; lateral tail-feathers terminated with white and streaked with black; iris red, length of beak 5½ inches.

Female.—No red; white of the plumage cloudsied brown, with a greater number of spots and black spots in the male; the black of the upper parts is also perfect.

Varieties.—Pure white; yellowish-white with the black of the plumage weekly developed; sometimes ranged with white feathers.

This is Le Petit Epithète and Le Petit Pic of the French; Picchio sarto minor, Picchio piccolo, Picchio Cardellino, Picchietta Cardellinetto of the Italian; Pietzchen-Specht, Garten und Grau-Bunt-specht, Kleinere Junger, and Kleiner Baumhauk of the Germans; Kleine Konink, Specht of the Dutch; Lilla Hackspeltten of the Scandinavian Fauna; Lesser Spotted Woodpecker, Lesser Hackspelt, and Crow Bird of the modern British; Delor frith's of the ancient Britons.

Geographical Distribution.—This, the least of the European Woodpeckers, but by no means the smallest of the family, is pretty generally distributed over Europe and some portions of Asia, and as far east as Siberia, to India. It is common in England, and Sir Robert Sibbald claims it as a Scotch bird under the name of Picus varius minor, a designation by which it was known to Ray and the earlier naturalists. In Ireland it does not seem to have been noticed.

Habits, Food, &c.—Woods, orchards, nursery gardens, and well-timbered parks are the haunts of this pretty little bird. 'In England,' says Mr. Gould, 'it is far more abundant than is generally supposed; we have seldom sought for it in vain wherever large trees, particularly elms, grow in sufficient numbers to invite its abode. Its security from sight is to be attributed more to its habit of frequenting the topmost branches than to its rarity. Near London it is very common and may be seen by an attentive observer in Wimbledon, Kensington Gardens, and in any other park in the neighbourhood. Like many other birds whose habits are of an arboreal character, the Lesser Spotted Woodpecker appears to perform a certain daily round, traversing a given extent of district, and returning to the same spot whenever it befalls; in which it begins its operations, of which it is especially partial, it not unfrequently visit orchard-trees of large growth, running over their nogrown branches in quest of the larvae of insects which abound in such situations. In its actions it is very quick and alert. Unlike the large Woodpecker, which perches on the trunks of trees, it naturally frequents the smaller and more elevated branches, which it traverses with the utmost ease and celerity; should it perceive itself noticed, it becomes shy, and retreats from observation by concealing itself behind the branch on which it is seated, or by turning its tail so as to engage the extinction of its food, its attention appears to be so absorbed that it will allow itself to be closely approached without suspending its operations. When the time commences, it becomes clamorous and noisy, and its call becomes an often-repeated note, so closely resembling that of the Jay, and its presence is only betrayed by the reiterated strokes which it makes against the bark of trees.' (Birds of Europe.)

The four or five eggs are deposited in a hole in a tree, which is generally suited to the size of the bird, whereby larger intruders are excluded, and sometimes very deep. They are of a delicate flesh-colour before they are blown, but are so transparent that the colour imparted by the shell is visible, when blown they are of a shining white.

The Greater Spotted Woodpecker (Dendrocopos Major). Upperfigtv, male; lower, female. (Gould.)
Sweden, Russia, and Siberia forming its principal habitat; that it is also found among the Alps of Switzerland, is but an accidental visitor in France and Germany, and has never been taken, he believes, in the British Islands. Dr. Richardson says that this bird exists in all the forests of spruce-lying between Lake Superior and the Arctic Sea, and that it is the most common woodpecker north of Great Slave Lake. It much resembles, he adds, Picus ellioutus in its habits, except that it seeks its food principally on decaying trees of the pine tribe, in which it frequently makes holes large enough to bury itself, and remarks that it does not migrate. Temminck observes that the North American specimens are rather less and their colours more vivid than those of Europe; but the total length of a male killed near the sources of the Athabasca River (lat. 67°) is given by Dr. Richardson as nine inches six lines.

Insects and their larvae and wild fruits form the food of this species, which lays four or five pure white eggs in the hole of a tree.
vorous birds, says that there are other insect-eaters (serrulifer sometimes called the northern and lesser Pipra (Piciformes) of Aristotle’s text), and that some call both these Enocorax coromandus, that is, tree-pecker or piercer. These birds, he adds, resemble each other and have the same voice, but the greater has the loudest. They both obtain their food by flying to the trees and setting them alight. The Colius (eolien) and Colius (loleic), however, whose text is the only good one, also, which is the size of the Turtle-dove, but whose colour is green entirely. This, Aristotle says, is a great excavator of trees, on which it gets its living; and its voice is very loud. This bird especially occurs in the Peloponnesus. Aristotle then mentions another insectivorous bird, which is called Enocorax coromandus (eolienologia, grnat or insect catcher), and hollows trees; but this, from its small size and colour, can hardly have been any known Woodpecker. In the ninth chapter of the ninth book Aristotle states that the Dryocolaptes does best sit on the ground, but pecks the oak to make the worms and insects come forth, which it afterwards catches with its tongue, which is broad and large. It runs very quickly upon the trees.

This part of the description answers very well for a woodpecker, with the exception of the epithet ’broad’ as applied to the tongue. No known woodpecker has a broad tongue, and indeed the conformation forbids such a structure.

The rest of the description, relating to the strong claws for enabling the bird to fix itself against the tree and climb it, applies exactly to a woodpecker.

Aristotle mentions three of these Dryocolaptes, one smaller than a Cotyphus (black bird probably), which has red spots; a second of the same size as a Cotyphus; and a third not much less than a hen. It has its nest on trees, especially in the olive-tree, and feeds on enmets and worms which come out of the trees. To get at the worms he hollows the trees so much that, he remarks, care is to fall. A tame one having adjusted an almond in a chink of wood, broke it at the third stroke and ate the kernel.

Aristotle also mentions the strong and compact bill of the Dryocopus in the first chapter of the third book (De Plutius Anim). We have seen Belon’s opinion as to the Dryocopes; and he considers one of the Spotted Woodpeckers with red spots to be the Pipra. In his chapter on the ‘Pic verd rouge, nommé en Français Une Épeiche,’ he places above the cut the following synonyms:—'Pipra en Grec, Pipo et Picus martius minor in Latin, Épeiche, Cul rouge, ou Pic rouge en Français.’ (Folio, 1555.) In the 'Portraits d’Oiseaux' (1657) the same cut is superscribed ‘Grec, Pipra, Latin, Picus martius minor, Picus varius also printed in Italian, Greek, and French: ‘Épeiche, Cul rouge, Pic rouge.’ Beneath the cut are the following lines:

M. Camus is of opinion that the great Pipra is the Pic noir of M. Buffon, Picus martius; that the Colius en Pittius Anim and others, Picus viridis; and that the little Pipra is the Pic veri or Épeiche, Picus major.

Pliny appears to use the term Picus martius as a general name for all Woodpeckers. Thus, in the eighteenth chapter of his tenth book (Nat. Hist.), ‘De picis martio,’ he notices ‘pici, martio cognominis insignis’ as small birds with crooked claws, and proceeds to give a very fair account of their climbing and woodpecking habits, ‘scandentes in subretuum, selium modo,’ and their catching their young in the hollows. He who is entertained with Roman fable will find some amusement in Pliny’s pages where he speaks of these birds, which were highly esteemed in augury, especially in Latium, out of veneration to the mythical king from whom they derived their name. (Nat. Hist., x. 33; xi. 37; xxvi. 4; xxvii. 10; xxx. 16.)

Asiatic Woodpeckers.

Examples, Picus squamatus.

Description.—Top of the head and occiput scarlet; above and below the eye a yellowish-white streak; a black line extending from the base of the upper mandible to the sides of the neck; the upper surface of a bright green; quill-feathers and tail dull olive black, barred with white; throat and breast greyish-green; abdomen and under surface of a still lighter tint, marked with black scales densely and regularly disposed; bill yellowish-white, horn-brown at the base; tarsi brown. Length 12 inches.

Geographical Distribution.—Asia; the Himalaya Mountains.

Mr. Gould, from whom the above description is taken, observes, in his ‘Century,’ that there appears to be a natural group of the Woodpeckers, intermediate between the genus Colapes, whose habits confine them entirely to the ground, and the typical Picidae, who gain their subsistence almost wholly from the bark of trees. In this intermediate group we have Picus viridis and the Picus canus of the Continent considered as the types, and which are the only species found in Europe—the present species as well as Picus occipitalis, also a Himalayan bird, may be classed. All frequent trees as a resort for food, while at the same time they equally subsist, like the ground-feeding species, on nuts and other insects, which they obtain on the surface of the ground.

Mr. Gould further states that the locality of Picus squamatus as well as Picus occipitalis is believed to be confined solely to the higher parts of the mountains.

Picus Squamatus. (Gould.)

Picus Squamatus. (Gould.)

Picus Squamatus. (Gould.)

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Picus Squamatus. (Gould.)

Picus Squamatus. (Gould.)

Picus Squamatus. (Gould.)
**Picus tigris,** Horst., an inhabitant of the Indian Archipelago, as well in colouring as in the absence of the hinder toe, which in both birds is represented only by a rudimentary tubercle.

Mr. Gould, who makes this observation, and from whose work on the Himalaya Birds the description is taken, remarks that it was the only one which the Hon. C. J. Shore, (through whose zoological researches in India the bird was first made known, and upon whom it was named) was able to procure. Few, if any, of the tribes surpass it in brilliancy of plumage.

**AFRICAN WOODPECKERS.**

**Example. Picus cafer (Genus Trachyphonus, Ranz; Orcipicops, Linn.; Polyiptite, Smith).**

This form, as we have already seen, has been arranged by Mr. G. R. Gray as the last of the subfamily Buceconinae.

**Generic Character.—** Bill of the length of the head, convex above, pointed, recurved or arched longitudinally, upper mandible thicker than the lower; nostrils oval, basal, furnished with bristles; tarsi slender; third quill longest; tail rounded.

The birds of this genus are Woodpeckers which seek their food on the ground, and under the bark and in the moss which grows on trees, and indeed the old zoologists termed the species which we have selected as an example a *Picus*. It differs however considerably from the typical woodpeckers, which has led to its separation, and the generic name applied to it by modern zoologists.

**Description of Picus cafer.** Head, belly, and rump yellow; upper covert of the tail orange; forehead black; two black smoky pointed aigrettes; a large black collar variegated with white, bordered above with a small narrow white edge, varied a little with brown below; back of the neck and back brown, each feather terminated with white. Tail rounded, brown, striped with greyish-white; bill black at the point.

This is the *Plumbeus* of Le Vaillant; *Trachyphonus* Voltzii, Ranz; *Micropteron sulphuratus*, Linn.; and *Polyiptite* guayaquil, Smith.

**Locality.** California. P. C., No. 1747.

**HABITS, FOOD, &C.—** This species inhabits the forests, and lives on insects and their larva which harbour in the moss that grows on trees and under their bark.

**AMERICAN WOODPECKERS.**

It is not to be wondered at that America, so rich in deep forests as it once must have been, and indeed is now where the axe of the woodman has not yet penetrated, should possess many species of Woodpeckers. Lawson thus enumerates those in Carolina known to him.

'Of Woodpeckers, we have four sorts. The first is as big as a pigeon, being of a dark brown colour, with a white cross on his back, his eyes circled with white, and on his head stands a tuft of beautiful scarlet feathers. His cry is heard a long way; and he flies from one rotten tree to another, to get grubs, which is the food he lives on.

'The second sort are of an olive colour, striped with yellow. They eat worms as well as grubs, and are about the bigness of those in Europe.

'The third is the same bigness as the last; he is pied with black and white, has a crimson head without a topping, and is a plague to the corn and fruit; especially the apples. He opens the covering of the young corn, so that the rain gets in and rots it.

'The fourth sort of these woodpeckers is a black and white speckled or mottled; the finest I ever saw. The cock has a red crown; he is not near so big as the others; his food is grubs, corn, and other creeping insects. He is not very wild, but will let one come up to him; then shifts on the other side of the tree from your sight; and so dodges you for a long time together. He is about the size of an English lark.'

Catesby notices the same species as Lawson and adds others; one of these, the Gold-winged Woodpecker, *Picus auratus* (Genus Colaptes, Sw.), appears to belong to the same genus as *Picus cafer* above noticed.

As examples of the North American species we select *Picus pilatus* and *Picus principalis*.

**Picus pilatus, (Genus Dryopoornus, Sw.).**

**Description.—Male.** Top of the head, occipital crest, and maxillary strip bright scarlet. Line bounding the crest laterally from the eye, a band from the nostrils to the side of the nape, thence along the neck to the sides of the breast, the concealed bases of all the quill-feathers, a spot covered by the spurious wing, the chin, throat, and lower body, is fringed with white. A bar across the orbit and to the middle of the nape, and the rest of the plumage pitch-black, purest on the quills and tail. Some of the ventral feathers are fringed with grey, and two or three of the greater quills are tipped exterally with brownish-white.

The female has a yellowish-brown forehead, with darker Vol. XXVII—32
shafts and a blackish maxillary stripe. Length of a male killed in the winter, lat. 57°, near the Rocky Mountains, 20 inches.

This is the Larger Red-crested Woodpecker of Catesby; Pileated Woodpecker of Pennant and others; Pileated Woodpecker or Log-Cock of the Anglo-Americans; Mok-hee-canneeses of the Cree Indians; Thëë-dile-thëë of the Chipewyan.

Geographical Distribution.—Not unfrequent in well-timbered forests, from Mexico to Canada, at least to the 50th degree N. (Nuttall). Resident all the year in the interior of the United States, from the thirty-sixth degree of latitude to the Arctic parallel; rarely appearing near Hudson's Bay, but frequenting the gloomiest recesses of the forests that skirt the Rocky Mountains. All the United States, and particularly numerous in the Gennesee country. in the state of New York, (Richardson.) Nuttall notices as singular, and perhaps showing the wild timidity of the bird, that though an inhabitant towards the savage and desolate sources of the Mississippi, it is unknown, at this time, in all the maritime parts of the populous and long-settled state of Massachusetts.

Habits, Food, &c.—Catesby says that these birds (besides insects which they get from rotten trees, their usual food) are destructive to 'maiz' by pecking holes through the husks that inclose the grain, and letting in the wet. Dr. Richardson says that the stillets of the crow-like bill which it frequents is often invaded by the stroke of its powerful bill, which excels the woodman's axe in the loudness of its sound, and still more in the rapidity with which it does its work. Inaccurately to express what is by far the most extraordinary feature of the Rocky Mountain Woodpecker, it is almost impossible to short in the quantity of chips it produces. Like other Woodpeckers, it is, he says, extremely industrious, seemingly never a moment idle, flying from tree to tree, and plying its head like a hammer the instant that it alights. A few strokes of the bill suffice to decompose the state of the tree; and Dr. Richardson concludes his observations on this species by remarking that if the bird judges that it would explore the interior of the tree, it instantly quits that tree for another.

The wood is filled with trees which cast their giant arms over all the uncumbered river lands may often be heard his loud, echoing, and incessant cackle, as he flies restlessly from tree to tree, presaging the approach of rainy weather. These notes resemble ekere rek rek rek, rek rek rek, uttered in a loud cadence, which gradually rises and falls. The marks of his industry are also abundantly visible on the decaying trees, which he probes and chisels with great dexterity, stripping off wide flakes of loosened bark, to come at the burrowing insects which chiefly compose his food; he has been shown engaging in that pursuit, and wildness and savagery govern all his motions; and by dodging and flying from place to place as soon as observed, he continues to escape every appearance of danger. Even in the event of a fatal wound, he will struggle with an unremitting resolution. He mast be removed from the trunk to which he trusts for his safety, to the very instant of death. When caught by a disabling wound, he still holds his ground against a tree, and strikes with bitterness the suspicious hand which attempts to grasp him, and, resolute for his native liberty, rarely submits to live in confinement. (Nuttall) further states that this species is without much foundation charged at times with tasting maize, but in winter he observed the bird in South Carolina occasionally making a hearty repast on a small piece of bread.

The female lays about six snow-white eggs in the cavity of a tree. Two broods are said to be produced in a season.

Picus principalis.

Description.—Black with a gloss of green. Fore part of the wings, the rest of the crest crimson, with some white at the base. A stripe of white proceeding from a little below the eye, down each side of the neck, and along the back (where the two are about an inch apart) nearly to the rump. Tall black, lapering from the two extremities of the head, and forming a single band. This stripe is three inches shorter than the middle ones, the feathers conceave below. Legs lead-colour. Bill an inch broad at the base, of the colour and consistence of ivory, and channeled. Tongue also white. Iris vivid yellow. Length about twenty inches; alar extent about thirty inches. (Nuttall.)

This is the Largest White-bill Woodpecker of Catesby; Ivory-billed Woodpecker and Large Log-Cock of the Anglo-Americans.

Geographical Distribution.—Brazil, Mexico, the Southern States, seldom seen to the north of Virginia, and rarely in that state.

Habits, Food, &c.—Catesby says that these birds 'winch chiefly on ants, woodworms, and other insects, which they saw out of rotten trees, Nature having so formed the bill, that it could be driven into a hole of four inches in diameter, and be holded by the middle. For the Spaniards call them Cucarones. He adds that their bills are much valued by the Ouac Indians, who make corncorns of them for their prized great warriors by fixing them round a wreath, with the points of the bills, for the summer season. None of these birds in their cold country, purchase the southern people at the price of two and sometimes three buck-skins a bill.

Nuttall states that it is a constant resident in the counties where it is found, in the treeless regions, even in the rainy season, and that the pair are believed to exist for life. 'More vagrant,' says Nuttall in conclusion, 'and independent than the rest of his family, he is rare found in the precincts of cultivated tracts; the scene of less remarkable is the two times, amidst trees of greatest magnitude. His reiterated trumpet note, what that similar to the high tones of the clarinet ('pait, pait, pait), is heard soon after day, and until a late morning, echoing loudly from the recesses of the攻克 trees, upon the tops of the hills, without showing any impartent or necessary desire to quit his native solitary abodes. Upon the giant trunk s moss-grown arms of this colossal of the forest, and staked by the stalwart, whose beak, the high rattleting clarion and repeated strokes of the princely Woodpecker are often the only sounds which vibrate through and communicate an air of life to the dismal wilds. His strident interrupted call, and his industrious blow that make the noisy scene of solemn grandeur, on which the mind dwells in a moment with sublime contemplation, convinced the there is no scene in nature devoid of harmonious existence. Nor is the performance of this industry, the loud chopings of his powerful bill. He is soon surrounded with striking monuments of his industry: like a reaper (a nick-name given him by the Spaniards), he is seen surrounded with cart-loads of chips and the unavailable mortar of the mass of bark which he has already divided from the coarser roots of the tall pine and cypress where he has been a few hours employed; the work of half a dozen men, falling trees in a whole morning, would scarcely exceed the pile he has produced in quest of a single breakfast upon a large tree which has already had the bark removed by the tree preparatory to his repeat. Many thousand of pine-trees in the Southern States have been destroyed in a single season by the insidious attacks of insects; and in the dormant state are not larger than a grain of rice. It is in quest of these enemies of the most imposing of the vegetable creation that the industrious and indefatigable Woodpecker exercises his peculiar labors. In the sound and healthy tree he finds nothing which serve him for food.

Wilson, whose 'American Ornithology' is known to every lover of the subject and of nature, wounded one of these birds. His narrative is painful. The Woodpecker did not survive his captivity more than three days, and he manifested an unequaled resolution and refinement of all sentimonts. When he was taken he uttered cries almost like those of an infant; and no sooner was he set alone for an hour, than he so worked, that he neatly cut a way through the wooden house in which he was held. He never made a hole large enough to admit natural ventilation, and sketched him, and died with unabated spirit. The unconquerable courage most probably gave the head and bill of the bird so much value in the eyes of the Indians. The four or five white eggs are generally laid in a hollow, at the base of a cypress or other large tree, on the underside of the trunk, at which both the male and female have laboured, to enlarge and fit it for the purposes of incubation, till it is some two or more feet in depth. About the middle o
June the young are seen abroad. Besides the usual arborescent insects, this woodpecker, it is said, is fond of grapes and other berries; but Indian corn, other grain, or any orchard fruit, it does not touch, according to good authorities.

As an example of the South American Woodpeckers we select:—

*Picus chilensis.*

Description.—Somber with little bars of brown and whitish except on the lower part of the back and rump, where a single colour predominates, forming a large patch of pure white; bill black; a grey hood, pencilled with very bright grey, covers the head; cheeks rusty, and throat whitish; all the upper part of the body, wings, and even the great quills, rusty brown barred with small whitish bands; shafts of the quills golden yellow, and their internal part fulvous brown, with a white border or a single spot of the same colour towards the middle; breast, abdomen, and flanks whitish, dotted with brown; colour of each feather yellowish-white, while the middle is occupied by a circle of brown deepest upon the breast. Tail-feathers stiff and wedge-shaped, brown above with a slight fulvous tint brightest below; the two external and the two internal ones are pencilled with whitish sinuous bands upon their edges. Colour of the tail greenish; that of the claws approaching reddish. Total length more than eleven inches. (Lesson.)

Locality.—The woods of the province of Concepcion at Chile. M. Leson killed many individuals upon the peninsula of Talcahuano.

The Chilians call this bird *Carpantero,* a name generally applied by the Spaniards to the woodpeckers, both in Europe and America.

No woodpeckers appear to have been found in Australia nor in the South Sea Islands.

**WOOD-PIGEON, one of the names for the Ring-Dove, *Columba Palumbus.* (COLUMBIDE, vol. vii., p. 37.)**

**WOOD-SORREL. [ONALIDACE.]**

**WOOD-SWALLOWS, a name given by the colonists of Australia to birds belonging to the genus *Artamus* of Vieillot: *Ocypterus,* Cuv.; *Leptopteryx,* Horst.; *Lanius,* Linn. They are the Swift Shrikes of Mr. Swainson.

Although ornithologists very frequently use Cuvier's generic name, *Artamus* has the priority, and, moreover, Cuvier's term had been pre-occupied to designate a genus of insects.

The genus has been generally arranged among the Swallows (vol. xxv., pp. 415, 416); but Mr. G. R. Gray, although he places it under the Dicrurinae, makes that subfamily the fifth and last of the Amphidiae.

Generic Character.—Bill gradually nched from the base, where it is very broad. Calummen thick and convex, without any ridge; the base dividing the frontal feathers and somewhat dilated. Rictus bishelled. Nostrils wide apart, naked, small, without a membrane, and pierced in the bill. Feet short, strong. Wings very long and pointed; the first quill longest. Tail short. (Swainson.)

**Geographical Distribution of the Genus.—India and Australia.**

**INDIAN WOOD SWALLOWS.**

Example, *Artamus leucorhynchos.*

Description.—Size rather larger than a sparrow, and in shape much more elongated. Head, neck, breast, back, wings, and tail black. Belly and upper part of the rump white. Under part of the wings (which are very long and reach at least an inch beyond the tail) grey. Bill greyish, conical, and very strong, slightly curved at its extremity, and its base surrounded with stiff bristles directed forwards. Legs black.

This is the *Lanius leucorhynchos* of Gmelin, *Pigregische Dominiquina des Philippines* of Sonnerat, and *White-belted Shrike of Latham.*

Habits.—Sonnerat states that this bird flies with rapidity, poised itself in the air like the Swallows. It is, he adds, an enemy to the crow; and although much smaller, the wood swallow not only dares to oppose but to provoke him. The combat is long and stubborn, sometimes continuing for half an hour, and concludes with the retreat of the wood swallow.
the crow. Perhaps, says Sonnerat, the crow despises this too, for unless some one is listening it dares not approach, and avoids his strokes by his activity, darting away and returning as he sees his opportunity.

M. Valenciennes has published a monograph of the species in the *Mémoires du Mus.* (tome vi, p. 20).

**Austrian Wood Swallows.**

Mr. Gould, in the sixth part of his great and beautiful work on the *Birds of New Holland,* now in course of publication, has figured and described no less than six species of *Artamus.* Of these we select as examples, *Artamus sordidus* and *Artamus cinereus.*

*Artamus sordidus.*

**Description.**—Head, neck, and the whole of the body, a sordidus grey; wings dark bluish-black, the external edge of the second, third, and fourth primaries white; tail bluish-black, all the feathers, except the two middle ones, largely tipped with white; irides dark brown; bill blue, with a black tip; feet nearly lead colour. Sexes alike in colour, but the female rather the smallest.

Young with a dirty-white irregular stripe down the centre of each feather on the upper parts, and motled with the same on the under parts.

This, according to Mr. Gould, whose description is, in the *Sordidus Turkheim,* *Artamus sordidus* of Latham; *Cephaleris albovittatus of Cuvier,* Valenciennes, and Gould’s Synopsis; *Artamus lilatus* of Vieillot; *Artamus albovittatus* of Vigors and Horstfield; *Leptopteryx albovittata* of Wagner; *Beit-sheer of the Aborigines of the lowland district of the Australian mainland (central area); and the *Wilde* of the Aborigines of King George’s Sound.

**Geographical Distribution.**—Mr. Gould states, that no species of the Australian *Artamus* with which he is acquainted possesses so wide a range from east to west as *Artamus sordidus*; it being present in the whole of the southern portion of the continent as well as in Van Diemen’s Land. The extent of its northern range, he says, has not yet been satisfactorily ascertained, beyond the certainty that hitherto it has not been received from any colony north of the Derwent.

**Habits, Food, &c.**—The same observing and enterprising ornithologist observes that it may be regarded as strictly migratory in Van Diemen’s Land, where it arrives in October, the beginning of the Australian summer, and after rearing at least two broods departs again northwards in November. On the continent, he remarks, a scattered few remain throughout the year in all the localities favourable to the habits of the bird, the number being regulated by the supply of the necessary insect-food. In specimens from Swan River, South Australia, and New South Wales, present no difference, he tells us, either in size or colour; but those from Van Diemen’s Land are invariably larger and of a deeper hue, a variety which Mr. Gould attributes to the superabundance of food in that more southern and humid climate.

This species breeds from September to December, and the situation of the nest is very much varied. Mr. Gould saw one placed in a thickly-leaved bough near the ground, while others were in a naked fork of a tree, on the side of thebole of a tree, in a niche formed by a portion of the bark having been separated from the trunk. He describes the nest as rather shallow, of a rounded form, about five inches in diameter, and composed of fine twigs neatly lined with fine grass and down. He observed that the nests found in Van Diemen’s Land were larger, more compact, and more neatly formed than those on the continent of Australia. The eggs, which are generally four in number, differ in the disposition of their markings. The dull white of the ground-colour is decorated with dark greyish-brown spots, and some Mr. Gould found a second series of greyish spots appearing as if from beneath the surface of the shell. Medium length eleven lines, and breadth eight lines.

But the general habits of this bird are so interesting and in certain instances so peculiar, that we shall lay them before our readers in Mr. Gould’s own words:

‘This Wood Swallow, besides being the commonest species of the genus, must, I think, be regarded a general favourite with the Australians, not only from its singular and pleasing actions, but by its often taking up its abode and incubating near the houses, particularly such as are surrounded by paddocks and open pasture lands skirted by large trees. It was in such situations as these in Van Diemen’s Land, at the commencement of spring, that I first had an opportunity of observing this species; it then very numerous on all the cleared estates on the north side of the Derwent, about eight or ten being seen on a single tree, and half as many crowding one another on the same dead branch, but never in such numbers as to preserve the appellation of nester. The call of this bird is act independently of the other; each, as the desire for food prompted it,setting forth from the branch to capture a passing insect, or to soar round the tree and return again to the same spot; on alighting it repeatedly throws up one claw, and stretches one wing at a time, and spreads the tail oblique, prior to settling. At other times a few were seen perched on the fence surrounding the paddock, on which they frequently descended, like starlings, in search of coleopterous and other insects. It is not however in this state of comparative quiescence that this graceful bird is seen to its best advantage; neither is it that kind of existence for which its form is especially adapted; for although its structure is more equally suited for terrestrial, arboreal, and aquatic habits than that of any other species I have examined, it is the form of its wing at once points out the air as its peculiar province; hence it is that when engaged in pursuit of the insects which the serene and warm weather has sent from their lurking-places among the foliage to sport a higher region, these birds soak in the air, and where they display its greatest beauty, while soaring above in a range of easy positions, with white-tipped tails widely spread.

Another very extraordinary and singular habit of this bird is that of clustering like bees on the dead branch of a tree, for the purpose of clearing the branches; such an assembly has been observed by Mr. Gilbert, during his residence at Swan River, and I have given his account in his own words:— “The great peculiarity in the habits of this bird is its manner of depending itself in perfect clusters, like a swarm of bees on a dead and thickly-crowned tree, on the under side of the dead branch, while others of the flock attach themselves one to the other, in such numbers that they have been observed nearly of the size of a bushel measure. It is very numerous in the town of Perth until about the middle of April, when I missed them again until near the end of May, when I saw it in countless numbers flying in company with the common Swallows and Martins over a lake about ten miles north of the town; so numerous in fact were they that they deserted the water as they flew over it. Its voice greatly resembles that of the Common Swallow in character, but is no more harsh.”
Mr. Gould gives a representation on the plate which accompanies his description of this extraordinary clustering habit. The birds in the representation at once remind one of a swarm of bees.

**Artamus cineraceus.**

*Description.*—Crown of the head, neck, throat, and chest grey, passing into sooty grey on the abdomen; space between the bill and the eye, fore-part of the cheek, chin, upper and under tail-covers jet black; two middle tail-feathers black; the remainder black largely tipped with white, with the exception of the outer feather on each side, in which the black extends on the outer web nearly to the tip; wings deep grey, primaries bluish-grey; under surface of the shoulder white, passing into grey on the under side of the primaries; irides dark blackish-brown; bill light greyish-blue at the base, black at the tip; legs and feet greenish-grey. Sexes alike in colour, and only to be distinguished by dissection. (Gould.)

This, the largest of the Australian Wood Swallows, is the *Ocypterus cineraceus*, Valenciennes; and also the *He-wa-wen* of the Aborigines of the lowland and mountain districts of Western Australia, and the *Wood Swallow* of the colonists of the same.

*Geographical Distribution.*—Timor and Australia. Range in the last-named country extensive. Found by Mr. Robert Brown at Broad Sound in the east, and by Mr. Gilbert on the west coast.

*Habits. Food, &c.*—Mr. Gould states that in Western Australia, although a very local, it is by no means an uncommon species, particularly at Swan River, where it inhabits the limestone hills near the coast and the ‘Clear Hills’ of the interior, assembling in small families, and feeding upon the seeds of the *Xanthorrhoea*, so that insects do not form the sole diet of this species. Mr. Gould indeed observes that with such avidity does it devour the ripe seeds of this grass-tree that several may be seen crowded together on the perpendicular seed-stalks of the plant busily engaged in extracting them; but he adds that at other times, particularly among the limestone hills, where the trees are few, it descends to the broken rocky ground in search of insects and their larvae.

The round nest is compactly formed in October and November, sometimes of fibrous roots lined with fine hair-like grasses, sometimes with grass-stems and small plants, and placed either in a scrubby bush or among the leaves of *Xanthorrhoea*. Mr. Gould remarks that it is deeper and more cup-shaped than those of the other members of this group. The eggs vary much in colour and the character of their markings. Bluish-white is the usual colour, spotted and blotched with lively reddish-brown, intermixed with obscure spots and purplish-grey dashes, the markings most numerous towards the larger end. (Birds of Australia.)
great demand for timber during the last war has greatly thinned them of their finest trees. When woods were abundant and covered a great portion of the land, little attention was paid to the increase or preservation of the trees; kings and lords of manors readily granted to their tenants rights of comminage, with the privilege of lopping the branches, always supposing them to be useless dead wood. The consequence of this is still to be seen in all old forests, which are now covered by the rooks, sparrows, which never found the fine trees enclosed or protected. The fine old trees, whose age can scarcely be guessed at, which are very picturesque objects and a fit study for the landscape-painter, have all evidently been topped, at some time or other, for the sake of the wood. For want of proper care, they have probably not been in such a state as would afford fine timber for shipbuilding. Windsor Forest, which has only been inclosed since 1813, affords many specimens of noble trunks now hollowed out by time and the admission of water from above, which might probably still be valuable, and which had they been duly protected, and only those branches carefully cut which were dead and showed decay. The dates of the inclosures of different parts of Windsor Great Park can be readily discovered by observing the forest of the oldest trees. In many extensive woods on private estates the want of care may be readily seen at the first inspection. Oak-woods are chiefly found in stiff clay soils, where the water is apt to accumulate, by which the roots are injured. The decay begins at the bottoms of the trunks and have attained their full growth. The water should be carefully let off by open drains and ditches, which should be regularly examined and cleared out every year before winter. The surface being thus kept dry, the timber, as well as the underwood, will grow more rapidly, and if not covered with the wood the will simply repay the outlay. Cattle should be carefully excluded from all woods; they destroy the young shoots by cropping them, and do much damage to the trunks. At the time when acorns and beechnuts are plentiful, pigs may be turned in without danger; for the acorns will turn up the ground in search of their food, and thus bury beechnuts and acorns, which may vegetate, and grow in time into fine trees; for it is well known that an oak raised in a nursery is always better and before than one which is raised in a nursery and transplanted in the woods; and the same may be said of beech raised from the seed.

The sweet chestnut is one of the most useful trees in a wood, provided it has room to grow. Its timber, when of a certain age, is as durable as oak, and the shoots which spring up from the old trunks cut down give the most useful and profitable coppice-wood. When it is recollected that a coppice may be cut advantageously every ten years, the calculation becomes still more profitable. If the timber after many years, it will be found that the wood, properly managed, pays fully as well as the timber. It is usual to cut down such trees as begin to show decay at top, when the coppice is cut; but it is better to anticipate this decay, and cut them when the money from such a tree year from year to year becomes as much as the interest of the money they would sell for amounts to. For example: Suppose that an oak standing measures fifty cubic feet, and with top, top, and bark, may be worth 10l. If it does not increase above two cubic feet in a year, it will not be profitable to let it stand, but if it be cut down others which interfere with the growth of its branches, its growth can be promoted, it may probably increase so much as to pay a good interest on its value. This is the case, in the case of a chestnut, when it would be much easier to cut. The time is a period when the increase of the wood in a tree is a maximum, and this depends on soil and situation. The head and branches contribute much to the growth of the trunk, and unless they have room to spread, the increase decreases in the part of the head. As the time for such a tree and for the branches begin to approach those of another tree, room must be made, by cutting out those trees which appear inferior in shape or in health. In the management of young plantations [Pl. 351], it is a question whether it is more profitable to cut off young trees at one time, or to let them arrive at their full size, which, for oaks, will take 150 or 200 years. The calculation is made on the annual increase of the wood, which is said to be greatest when the tree is about thirty years old. It has been often supposed that the slower a tree grows the stronger the wood will be; but this is a mistake, and some from one which, having been headed down as a pollard, had grown slowly, were tried by the action of a very powerful hydraulic-press, and the wood of the quicker growing trees showed the pressure much longer before it was broken or crushed.

Although it is generally on soils unfit for cultivation that plantations of wood are made, yet there are procl

mestic trees, chiefly oak, ash, and elm, according to the soil; and the landlord, having the benefit of their growth, only earns them when fit for sale. The tenant is scarcely aware of what the future rents of the estate will be, but he well knows, from experience, that he will pay a better rent than if it had been cultivated as a farm. On such land it is usual to plant oaks in the hedge-rows, where the trees, having room both for their branches and their roots, thrive well at the expense of the hedges. Most old farms consist of the trees, trees chiefly oak, ash, and elm, according to the soil; wood, and for a farm.

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the lime and brick kilns. Where old hedge-rows are cleared in the progress of agriculture, it is a common practice to give the stumps and roots found in old banks to the poor, for the trouble of grubbing them up and leveling the ground. This work is generally done in woods, and the wood is stacked into cords six feet long, three feet wide, and three feet high, and sold, in Berkshire, from 5s. to 7s. a cord: where coals are 30s. or more a ton, this is a great resource.

In France and other countries where they use chiefly wood for fuel, the trees which are preferred are beech-trees, which are allowed to grow very close in the woods, so as to draw each other up and form long thin stems. They are cut down when about thirty or forty years old, and are sold for firewood, except in forests where timber is raised for building, and with proper attention to the old woods, and by judicious plantations of new, timber may be yet raised to a much greater amount than it is, and without encroaching on the land devoted to the crops necessary for the increase of meat.

**WOODS AND FORESTS.** A considerable portion of the royal revenue consisted formerly of the rents and profits of the crown lands, which comprised numerous lordships and honours, together with forests and chases: from the principal source of profits lay in the fines or amerciaments levied for offences against the Forest Laws. [**Forests.**] The demesne lands which were retained by the king, or which came to the crown by forfeiture or otherwise, and were farmed out to subjects, were called the crown woods, and the lands held hereditarily in the woods were called the private woods. By an Act of 16 Geo. III. (altered by the 50 Geo. III., c. 65), an officer of survey-general of his Majesty's works and public buildings was created; but this and other officers are now incorporated with that of the Commissioners of his Majesty's Works, Land Revenues, Works and Buildings (2 Will. IV., c. 1, s. 1), who are commonly called the Commissioners of Woods and Forests, which office or board owes its present permanent shape to the statute 10 Geo. IV., c. 50 (amended and extended by 2 Will. IV., c. 1, s. 1). The Commissioners, who are not to exceed three in number, are appointed by letters patent (2 Will. IV., c. 1, s. 1). They are to make a declaration (5 & 6 Will. IV., c. 62, s. 2.) in lieu of the oath required formerly, 2 Will. IV., c. 1, s. 1. They are to have the principal direction of the principal works in the woods, and the duties of commissioners. Their salaries are fixed at 2000l. per annum for the chairman or first commissioner, and 1200l. for the other two (10 Geo. IV., c. 50, s. 11; 2 Will. IV., c. 1, s. 7). Only one of them is allowed to be on the board at a time, or by a resolution of the board in writing, the property therein still remains in the crown. (1 Q. B. Rep., 352.) They are required hereafter to observe all the orders and directions of the Lords of the Treasury touching the exercise of their powers (3 Will. IV., c. 1, s. 9).

The Commissioners have the power of appointing and removing various officers, such as receivers, surveyors, &c., whose salaries however are fixed by the Treasury (10 Geo. IV., c. 50, s. 12). They may also appoint stewards of the royal hundreds and manors to hold courts, and different penalties and forestal offices to preserve game, fish, &c.; and they may grant licences to hunt, fish, &c. (Id., s. 14).

They are empowered to grant leases of any part of the crown possessions for thirty-one years (10 Geo. IV., c. 50, s. 22); or, in case of houses, buildings, &c., or building- land (for ninety-nine years) to the Commissioners, which is not required to be for building purposes, and the leasing does not extend to the royal forests in England (Id., s. 25), except for the purpose of making railroads (Id., s. 97). The leases are required to contain certain specified provisions, and the lessors are not to be made dispensable in the event of breach of the lease. The Commissioners may refuse to grant any of the leases of the Commissioners, in leases for ninety-nine years (Id., s. 27). The leases are to be granted at a rack-rent, and no fine is to be reserved (Id., s. 28), except in building leases, in which a nominal rent may be reserved for the first three years (Id., s. 30), and a fine may be taken not exceeding one-third of the rent (Id., s. 31).

They may also sell any part of the crown possessions, except the forests (Id., s. 34), according to a mode pointed out (Id., s. 35), and all revenues arising from the sale of the crown lands, and the proceeds of any leases granted to the Commissioners, shall be paid into the exchequer (Id., s. 36). The Crown are empowered to give certain notices and claims to and authorize entries on land for breach of covenant, &c. (10 Geo. IV., c. 50, s. 92), and to compound, in certain cases, for rent (Id., s. 38).

Their accounts for public and audit purposes, and for the audit of the Forests, are kept under the 25 Geo. III., c. 62 (10 Geo. IV., c. 50., s. 19).

The receivers appointed by the Commissioners of Woods and Forests must be surveyors (Id., s. 60). They are required to account at stated periods to the Commissioners (Id., s. 81), and to transmit all sums received monthly (s. 84); and they are empowered to distrain for rent (s. 90).

Grubbing without the management of the crown lands is thus vested in the Commissioners, and the general power of alienation has been taken from the king, a power is reserved to the crown to grant sites for churches, chapels, and burial grounds, not exceeding five acres in extent, or twenty in value (10 Geo. IV., c. 50, s. 32); and by 1 & 2 Will. IV., c. 59, s. 1, churchwardens and overseers are empowered, with the consent of the Lords of the Treasury, to inclose a portion not exceeding fifty acres of any forest or waste lands belonging to the crown, lying in or near their parish, for the purpose of cultivating the same for the use of the poor.

Besides this general control over the crown lands, certain powers are given to the Commissioners which are referable to the execution of the Forest Laws. The powers and authorities belonging to the Crown in this respect are vested in the First Commissioner (10 Geo. IV., c. 50, s. 50); and the commissioners are also vested with powers to prevent and remove all unlawful inclosures, encroachments, &c., in their courts of attachment, and may impose fines upon the offenders (Id., s. 100), which may however be proceeded against by the ordinary course of law (s. 105). The verderers may appoint agents, under foresters and other officers of the forests and courts (s. 101), and may inquire into their conduct, and fine them for neglect of duty (s. 102).
Other penalties may be recovered before a justice of the peace (c. 16); and all such fines and penalties are to be applied to the expenses relating to the forests (s. 105).

As to the general revenue arising from the letting, &c., of the crown lands, the commissioners are directed to pay in the moneys received by them, to a proper account with the crown and Jegels, respectively (10 Geo. IV., c. 50, s. 117, 118) and the chartered banks of Scotland (3 & 4 Will. IV., c. 69, s. 17); and the annual income (after certain deductions) is to be carried to the consolidated fund (10 Geo. IV., c. 50, s. 113; 3 & 4 Will. IV., c. 69, s. 16). The transfer of the revenue arising from the crown lands to the consolidated fund is however the subject of a special arrangement between the crown and the subjects, terminating with the life of the king in whose reign it is made.

In 1652, c. 50, contains some provisions peculiar to Ireland. Leases, grants, &c. of any of the small branches of the royal revenue (s. 128), and the powers appertaining to the chancellor and council of the Duchy of Lancaster (s. 130), are exempted from its operation.

The real property of the crown may be thus classified:—

1. Honours, manors, and hundreds, not in lease.
2. Other lands in the occupation of the crown, either for the personal convenience of the king or for the public service.
3. Forests, chases and wastes.
4. Lands, tenements and hereditaments, held of the crown by lease.
5. Fee-farm rents, issuing out of lands, tenements and hereditaments, held of the crown in fee-simple.

With this 5th object, it would be impossible to attempt any particular enumeration: the fourth consisted, at the time of passing the statute 26 Geo. III., c. 87 (a.d. 1786), of about 130 manors, 52,000 acres of land in cultivation, 1800 houses in London and Westminster, and 450 houses in other principal towns; the buildings in town and in many places of worship belonging to the Methodists and Roman Catholics, who are not included in the foregoing number.

The second class comprises the following royal palaces and houses:—Buckingham Palace; St. James's Palace; the Pavilion at Brighton; Windsor Castle; the palaces of Hyde, Blenheim, and Whitehall; the Old Palace at Westminster; the House at Winchester; the palace of Greenwich (converted into a hospital for seamen); Somerset House (used as public offices); the palace of Westminster (Westminster Hall), including the houses of parliament and courts of law.

The following palaces and buildings have been pulled down and their sites used for other purposes:—Carlton House; the Mews; Newmarket Palace.

The following parks are also included in this class:—St. James's, Hyde, Bushy, Wimbledon, Hampton Court, Regent's Park, and Windsor.

In the third class are included not only the royal forests which have preserved their jura regalia, but several nominal forests and chases, warrens, wastes, &c. The following is a list of the royal forests:—In England; Windsor Forest; in Essex, Waltham Forest; in Gloucestershire, the Forest of Dean; in Hampshire, Bere Forest, New Forest, and the Forest of Wooton and Aldiechol; in Northamptonshire, Rockingham, Whittlewood, and Balsley Fields; in Nottinghamshire, Sherwood Forest; in Oxfordshire, Wychwood Forest.

There has arisen incidentally out of the proper duties of the department of Woods and Forests, since it was united with the Board of Public Works, the important office of providing for the people public buildings and collections. The duty of the state in this respect has only been recognised of late years, and perhaps we owe it to our intercourse with the Continent, and especially with France, that it has been at all acknowledged. It is not out of the question that 50 or 60 years ago Hyde Park and Kensington Gardens were the only public places of recreation open to the crowded and hard-worked population of London; since then, the improvements in those two places, and the formation of new streets and squares in those parts of the metropolis of which the land either belongs to the crown or has been purchased by parliament for public improvements, there have been opened the large gardens of St. James's Park and the Regent's Park; Primrose Hill, at the north of the Regent's Park, and a large piece of land at the north-east end of London, intended to be laid out as "Victoria Park," have been purchased for the public.

The palace and grounds of Hampton Court have been repaired and adorned, and have been thrown open gratuitously to the public, and the collection of pictures has been arranged and enlarged. For the zeal and taste displayed in these things, the nation is indebted to the department of Woods and Forests.

Woolwich. The municipal and customary borough in Oxfordshire, 62 miles west-north-west from London, and 8 miles north-west from Oxford. The town is situated on rising ground, on the east bank of the Gwyne, a stream which is expanded into a lake in Blenheim Park. It is in the parish of Woodstock and liberty of Woodford. The hamlet of Old Woodstock, though not included in the municipal borough, may be considered as forming a part of the actual town of New Woodstock.

The town contains many good stone houses, and the streets are sufficiently wide. The town hall was erected about 1766, at the expense of the duke of Marlborough, after a design by Sir William Chambers. It is a good stone building, with a piazza beneath it, which is used as a market-place. The greater part of the town is served by the Board of Woods and Forests.

The municipal borough, which was not affected by the Municipal Reform Act, consists of a mayor, high steward, recorder, four aldermen, and twenty-six common-council men, and is returned by the commoners with a term of six years. The number of electors who had polled at any time during the thirty years preceding 1832, was 249. By the Reform Act the parliamentary borough has been much extended, and, in 1601, included a population of 72,000, who returned six members to parliament. The number of parliamentary electors at the register in 1832-30 was 369, of whom 216 were householders and 53 freemen. In 1836-8 the 10th householders were 240, and the freemen 64, in all 304. The area of the town is about 1600 acres. The town is only, and is de jure, the city and corporation of Woolwich, and is de facto within the limits of the parish of Woolwich, in ratio 144.

There has been little change in the number of inhabitants for the last forty years.

Blenheim Park, the magnificent domain of the dukes of Marlborough and the seat of the freeholders of Blenheim (BLENHEIM PARK) (Boundary Reports; Municipal Reports; Population Returns, &c.).

WOODVILLE, WILLIAM, was born at Cuckestones. He served an apprenticeship to an apothecary, and afterwards studied medicine at Edinburgh, where he graduated in 1775. After studying some time in the medical schools of the Continent, he returned to Cuckestones, where he commenced the practice of his profession. He continued here five or six years, and then removed to London. Here he was appointed physician to the Middlesex Dispensary, and in 1792 he was elected physician to the Small-Pox Hospital. Having paid considerable attention to the plants yielding medicinal substances, in 1793, a large work, in four quarto volumes, intitled 'Medical Botany,' which consisted of a series of plates representing medicinal plants, and containing an
count of their natural history and uses. This work is imper- perfect both in the drawings and descriptions of plants, but it was a valuable work at the time it was published, and has led to the production of better works on the same subject. In 1789 Woodward completed the publication of a work entitled 'History of the Small-Pox in Great Britain.' This work was never completed, on account of the introduction of vaccination about this time by Jenner. Dr. Woodville had good opportunities of investigating the causes of this disease ('Natural History of the Small-Pox') but was never able to form a satisfactory opinion on the subject.

This work received and deserved applause, but met with immediate opposition on good philosophical principles by J. A., M.D. (Dr. Arbuthnot), 1697. The author however remained unconvinced, and published in 1724 a defence of his system against the objections of Camerarius of Bonn, (Naturae Historiae Antiquae). To this work Woodward appended a Classification of Earths, Stones, Salts, Bitumens, Minerals, and Metals (Methodica Fossilium in Classibus Distributio), dedicated to Sir Isaac Newton, Pres. R. S.). In 1728, after his death, appeared an enlargement of this method, containing many interesting letters to Newton, Horskyns, &c., and directions for observers and collectors. A greater and more valuable work, in two volumes, published from Woodward's MS. in 1805 (An Essay on the Natural History of the Fossils of England), closes the list of the geological publications of Woodward. The first volume of this catalogue contains notices of above 'fifteen hundred bodies' in the first part, and a catalogue of 'English extraneous fossils' in the second part, and those connected with the University of Cambridge, and are still preserved therein, according to the directions of the will, by the professors on Woodward's foundation. In the second volume are described additional English and some foreign specimens, which it is hoped will be so.

Dr. Woodward appears to have been diligent and accurate in gathering information, and tolerably versed in the philosophy and science of his day, but his hypotheses are little in harmony with chemistry or mechanics, and some of his ideas are opposed to the allusions to natural philosophy. The sincerity and zeal with which he prosecuted geology are evinced by the noble bequest of his collections, and a fund for endowing a professorship, to the University of Cambridge; a bequest which has given the opportunity for Mitchell and Sedgwick to enliven the University, and to link the name of Woodward with some of the highest and surest generalizations in geological science.

1707 he published 'An Account of Roman Urns and other Antiquities likely dug up near Bishopsgate,' addressed to Sir Christopher Wren, and in other respects he distinguished himself as a collector of antiquities. His professional career appears to have been prosperous. He was elected fellow of the Royal Society in 1724, and was appointed Professor of Physic in Gresham College. He engaged in controversy with Mead and Friend on the subject of small-pox. His death happened in 1728.

WOOD-WREN, the name of a micrometric warbler which visits us in the spring and departs in September.

Mr. Yarrell, after tracing the steps of its history as a British bird through the works of White of Selborne, Pennant, and Montagu, observes that the bird is now very well known, and is at once distinguished from the true trochilus, or Willow-Warbler, with which it is most likely to be confounded, by the broad streak over the eye and ear-coverts of bright sulphur-yellow, by the pure green colour of the upper parts of the body, and by the delicate unblushed white of the belly and under tail-coverts.

In addition to these distinctions, which, Mr. Yarrell observes, on comparing the two birds, will be found very obvious, he points out the fact that the wing of the Willow-Warbler is nearly an inch longer than the wing of this bird; that the tail of the Willow-Warbler reach only to the end of the upper tail-coverts, or less than half way along the tail-feathers. The two birds here named, and a third species, the Chiff-Chaff, so called from its peculiar note, are, Mr. Yarrell remarks, the only British species included in the genus Sylvia as at present restricted. These, he states, differ from the warblers generally in the colour of their plumage, and in not being fruit-eaters. Their nests, he adds, are covered of dry moss and a little creep into the hollow chamber within by a small round hole, generally left in the side.
The Wood-Warbler or Wood-Wren appears to be the Sylvia sylvicola of Pennant; Motacilla trochilus of Bewick; Sylvia sibilans of Bechstein; Carvus sibilans of Wool; Bee-finch sylvicola of Temminck; La Faunette sylvicola of Vieillot; Lui verde di Savi; Grüner Sanger of Meyer; and Schuerrender, Grosschäubiger, and Nordischer Laubvogel of Brehm.

Geographical Distribution.—A Swedish summer visitor, but rare there, as it is in northern Europe generally. Of frequent occurrence in Germany, Holland, France, Provence, and Italy, in the summer. England and Wales, but not recorded in Scotland nor identified in Ireland.

Supposed winter-quarters, Egypt and Asia.

Habits, Food, &c.—The song, if song it may be called, of this species is to be heard in the woodlands of England and Wales in the spring, and during the greater part of the summer, accompanied by a shriveling of the wings, which, as the observer, by a peculiar tremulous motion of the wings, which are lowered by the side. A lofty elm in a hedgerow is often, he observes with equal truth, selected as the singing station, and the note is occasionally uttered while the bird wings its way from place to place.

Insects and their larvae form its food, which is captured both on the wing and among the leaves of trees. The oval and domed nest is framed, amid the herbage on the ground, of dry grass, leaves, and a little moss, with a finer lining of grass and hairs, but no feathers, which last are present in the nests of other warblers that build on the ground, with the exception of the other two Sylvia noticed above. The white eggs, most thickly speckled with purple-red and ash, are generally six in number.

WOOL

WOOL Lying hidden beneath. The goals of Angora or Cashmere, of Tibet, and of Cashmere yield woolly fibres of great beauty, which not only equal those of the sheep, but greatly surpass them; this wool however, as we shall see further on, is too costly to come prominently into competition with that of the sheep.

In a commercial and manufacturing point of view, a notice of wool may consist of its place of origin, the breed of sheep; and for an account of the growth and qualities of sheep's wool, the attempts made to improve it, the counties in England and the countries abroad whence it is procured, and the process of shearing, very little more will be necessary than that a reference to the article Sheep (p. 362). The history of wool in its unmanufactured state, is regarded the legislative enactments to which the commodity has been subjected, forms however a distinct subject, and is full of instruction in reference to the principles and commercial economy. In all former times, the growth of just opinions on such matters, and the many conflicts by which these changes were wrought. Wool as an article of wealth has been singularly exposed to these contests; for the agriculturists and the manufacturer, as to the number of their protection; as to the sale abroad, as to the value of their produce to the manufacturer; and as to the price of their produce to the agriculturist. The reason which led the two great class interests to take opposite sides on the question, and the effects which that opposition had on the wool trade, will be seen from the following brief details, drawn chiefly from Smith (Memorials of Wool). Bischoff (History of Wool), M'Colloch (Commercial Dictionary and Statistical Account of the British Empire, and France), and Hume (Progress of the Trade).

In the time of Edward I. a duty was imposed on the exportation of British wool; and great complaints were made on his increasing the duty in 1296 from 2d. to 6d. per bag. Lynn, Newcastle, Kingston-upon-Hull, Bristol, Yarmouth, Ipswich, Southampton, and London were appointed ports from whence wool might be shipped, and at which customs-officers were appointed to receive the dues. When the king had terminated some of the wars in which he had been engaged, he lowered the duty to half a mark per hundred; but the high duty was again imposed at a subsequent period. In 1327 he gave of the first enactment for prohibiting the exportation of British wool, a measure coincident with the attempts of Edward II. to encourage the woollen manufacture in England. He consequently the same year obtained great rates of wool as the means of defraying the expenses of war; and the gross absurdity of his former restrictions could not be better shown than by the fact, that while he ostensibly prohibited the export of British wool, he sent his price quote for sale abroad, as he could thereby obtain a higher price than at home. Throughout the remainder of his reign Edward had frequent contests with the Commons and the merchants respecting his grants of wool, and a payable on wool sold, and the prohibition to export it. The customs being not confined to agriculturists and manufacturers, but between the king on one side and all the subjects on the other. By a statute of 27 Edw. III., the towns of Newcastle, York, Bristol, Lincoln, Gloucester, Canterbury, Exeter, Exeter, Caermathen, Dublin, Waterford, Cork, and Drogheda were appointed *staples* for wool, that is places where *alone* wool could be sold; *mayors* of the *staple* appointed to seal every sack of wool sold; a custom duty of half a mark per sack was charged to *denizens*; and ten shillings a sack to *aliens*; and the power of exporting was limited to *merchant strangers*, or to Home town merchants.

During the reigns of Richard II. and Henry IV., there were repeated *subsidies* of wool to the king, payable from towns concerning the places for the staple, alterations in the customs' duty, and *licences* granted to particular
parties in respect to exportation. The same indeed may be said respecting the next two reigns; but by the time of Henry VI. the 'merchants of the staple' appear to have acquired a kind of monopoly, which was often made a subject of complaint. Edward IV. enacted that no 'alien' shall alienate any of the royal manors or estates, and that no wool exportation is to be made to Calais; and in the next three reigns the policy pursued, however mistaken, seems to have arisen rather from a hope of encouraging woollen manufacturers in England than from the interest of the king. In the reign of Edward VI. the large import of English cloth, as the meagre wool profitable, began to inclose common lands as sheep pasturages with so much eagerness as to cause great complaints to be made; and this may perhaps be taken as the commencement of a new demand or protest, so far as the cultivators took up a position really or ostensibly opposed to the interests of the people. It was not however till the time of Charles I. that the absolute prohibition of exportation was determined on seriously; and this seems to have been, in the first case, not so much a demand by the manufacturers, as a source of revenue to the king by granting licences to favoured persons.

After the Restoration, in 1660, however, the prohibition became distinctly enacted; and, as Mr. M'Culloch remarks, 'from about 1720 to 1725, the export of wool was strictly prohibited.'

The consequences of this prohibition soon showed themselves. The wool-growers, shut out from a foreign market, suffered from diminution of price; all kinds of extravagant expenditure and dissipation followed; the 4th part of the income from the export of wool; a system of 'wool-running,' or smuggling, became very prevalent; and many pamphlets appeared from parties taking opposite sides of the question at issue. The agriculturists, thus restricted in respect to wool, insisted on the support of the Spanish Merino sheep, and on the making of maintaining their rents; this disturbed the course of trade between England and Ireland; and the attempts made at the instigation of the woollen manufacturers to compel the use of woolen goods excited the hostility of the Irish, and at length made the system become disarranged. For nearly a century after this enactment the prohibitory law ran counter to the interests of nearly all classes except the woolen manufacturers; and it is exceedingly doubtful whether even they derived benefit from it.

Smith, in his 'Memoirs of Wool,' has enumerated a vast number of pamphlets, published in the last century, of the following general tenor: from English wool-growers, to show that Irish wool ought not to be imported into England; or to the manufacturers, to show that the English wool ought not to be sent to foreign countries; from Irish graziers, to show that both of these restrictions were unjust; and from foreigners, to show that the non-exportation of British wool led to retaliatory measures on the part of the agriculturists, and that measures felt that the export was fitted by legislative measures thrown into antagonism; and there arose from time to time complaints on both sides. For instance, in 1725, the woolen manufacturers presented a petition to the House of Commons, in which they represented that 'in order to distinguish each grower's sheep feeding on common grounds, it has been the ancient custom to put a mark of pitch, tar, and other ingredients, capable of enduring the severities of the weather, upon some conspicuous part of the sheep; but of late years the hands have been so well on the sheep feeding on common as in inclosed grounds, with such excessive quantities of marking stuff, in order to increase its weight, that the manufacture has been rendered universally difficult, and too frequently unproductive should exportation be interdicted.' The worsted manufacturers were particularly vehement; for they had a notion, whether correct or not, that no other country produced long combing or worsted wools equal to that of Lincolnshire; and that if they could keep the whole of this wool in England, they might perhaps retain a monopoly of the worsted trade.

The union with Ireland, in 1600, was another cause of disagreement in the wool trade. By one of the resolutions of parliament preparatory to that measure, it was determined that the two countries should be placed on an equality, as regards foreign trade, and manufacturers of wool profitable, began to inclose common lands as sheep pasturages with so much eagerness as to cause great complaints to be made; and this may perhaps be taken as the commencement of a new demand or protest, so far as the cultivators took up a position really or ostensibly opposed to the interests of the people. It was not however till the time of Charles I. that the absolute prohibition of exportation was determined on seriously; and this seems to have been, in the first case, not so much a demand by the manufacturers, as a source of revenue to the king by granting licences to favoured persons.

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gentlemen lb., and the attention of the government was repeatedly
directed to this matter, by the opposite statements of dif-
f erent parties. Finally, an attempt was made in parliament to
get the tax repealed in 1820, but without success. On March
13, 1821, the Earl of Liverpool made an announcement in
the House of Lords, in reply to petitions on the subject,
which is important as being perhaps the first distinct
authoritative recognition of those just principles which had
hitherto been neglected by both parties. Speaking of the
manufacturers, he said, 'It had originally been offered to
them, before the enactment of the new duties, that if they
themselves would agree to a free export of wool, their
value would be sufficiently recompensed.' What finally
resulted of this was, that the government would adopt a liberal
system on the one hand, if the manufacturers would do so on
the other. This was clearly the admission of an important
principle, which, if acted on earlier, would have saved
valuable reforms. But the wool manufacturers would not
accept the repeal of the tax at the expense of what
they seemed to think a greater evil—the free exportation
of British wool; and consequently the attempt fell to the
ground. Throughout 1820 and 1821, measures were held, speeches made, and petitions signed; and in the
following year Mr. Robinson (now earl of Ripon), after
alluding to the peculiar tinge of monopoly shown in the
arguments of both parties, proposed to admit the export
of British wool at one penny a pound, and the export
of foreign wool at an equal duty—thus showing to
both parties the same need of fairness. Neither party
seemed very well pleased with the proposal, but ministers
brought it before parliament, and carried it into a law.
In the year 1825, Mr. Peel appointed a committee of
the Lords, to examine witnesses in favour respectively of all the
four sub-parties (for the manufacturers were often alluded to
as being divided into the 'long-wool interest' and 'short-wool interest,' while the wool growers were in some cases the 'Merino interest,' and in others the 'South
Down interest'). The evidence taken before the com-
mittee appears to have convinced the government that it
would be wrong to re-impose duties on the import duties
as a protective measure; and there has not since then been any
renewal of the onerous duties.
Many of the legislative enactments here alluded to
depend evidently on some peculiarity in foreign wool which
fits into this picture; and this striking likeness is seen in
the evidence before the Lords' Committee in 1828,
where several eminent manufacturers stated that they
could scarcely find a sale for any woollen claths if made
wholly of English wool. This superiority in the Merino
wool led to a large demand for it, and the import duties
were in part of the wool imported in 1828
introduced the Merino sheep into England. He
produced a new breed by crossing the Merino with English
sheep, and tried to combine the good qualities of both.
But the wool never attained such excellence as to induce
the manufacturers to give a price adequate to the trouble
of rearing the sheep, and after some time the king pres-
ented his flock to various eminent graziers. In Mr. Bis-
choff's 'History of Wool' there are letters of so late a date as
1845, in which he mentions the object of which he
had the honour of presenting to the king his prize-winning
sheep. The Merino sheep presented to him by George III.:
by crossing Merino
rams with long-wool ewes, a breed had been produced
which yields a good carcase for the market and a good
fleece. There are two other cases where that the
importation of short or clothing wool, for which the Merino sheep
in its natural state is so valuable, has not been a proposed
object of attainment in these experiments.
The wool of the goat [Ancyra; Cashmere; Goat];
transplanted, as a material in the manufacture of shawls, has
been an object of some attention among naturalists and
graziers. In the articles just referred to, the nature of
this wool and the places of growth are mentioned; but
it is sitting here to allude to an attempt made to naturalize
in England the animals which yield this beautiful sheep
wool: the 'Transactions' of the Society of Arts is our au-
thority. About the year 1820 two agents were sent out
by the French government to Tibet, for the purpose of
bringing some of the shawl-goats to Europe. After many
difficulties, and a few of the goats reached Paris in 1823
from Mr. Tower, a gentleman of Essex, promoted two
rams and two ewes. These he tended carefully, and by
1828 his stock increased to 27, and in 1833 to more than
50. Mr. Tower had a shawl or two made from the wool;
but the quality yielded was not quite as small as to
render the attempt a failure in a commercial point of
view. Since then attempts have been made to combine
the Cashmere with the Angora, but we do not know with
what result.
A few statistical details may now be given to show the
nature and extent of the wool-trade, in respect both to
British and to foreign produce. These will be derived
chiefly from Mr. Bischoff's work, which, published in
1845, brings down the information nearly to the
present time. In the year 1823, Mr. Luceock estimated the quantity of
wool produced in England and Wales thus:

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short wool</td>
<td>202,737 packs</td>
</tr>
<tr>
<td>Long wool</td>
<td>131,794 packs</td>
</tr>
<tr>
<td>Skin wool</td>
<td>56,705 packs</td>
</tr>
</tbody>
</table>

Mr. Hubbard's estimate for 1823 was:

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short wool</td>
<td>129,917 packs</td>
</tr>
<tr>
<td>Long wool</td>
<td>263,847 packs</td>
</tr>
<tr>
<td>Skin wool</td>
<td>69,405 packs</td>
</tr>
</tbody>
</table>

A pack being equal to 240 lbs. It has often been as-}
tained that the attempts to improve the quality of
English mutton have deterioated the quality of the fine wool;
and this seems to be borne out by the numbers here given.
Mr. Bischoff gives a table to show the quantity of
foreign wool imported every year from 1741 to 1841. Th
e will condense to a quinquennial form, thus:

<table>
<thead>
<tr>
<th>Year</th>
<th>Import (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1777</td>
<td>1,892,772</td>
</tr>
<tr>
<td>1778</td>
<td>2,062,628</td>
</tr>
<tr>
<td>1779</td>
<td>1,999,543</td>
</tr>
<tr>
<td>1821</td>
<td>2,054,103</td>
</tr>
<tr>
<td>1826</td>
<td>2,014,511</td>
</tr>
</tbody>
</table>

These numbers sufficiently show how prone Eng-
lish wool manufacture is, when left to itself, to deri
ve the use from foreign wool.
All the finer wools used to be brought from Spain
and Portugal, and in the 1783 the elector of Saxony imported into his domain
from few other countries, of which have had a surprising in-
fluence on the trade in wool. The Saxony Merinos, inter-
ed of degenerating, improved upon their Spanish progenet,
and the wool afforhed by them has almost driven Eng-
lish wool out of the English market. This may be shown thus:

<table>
<thead>
<tr>
<th>Year</th>
<th>Import (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>1819</td>
</tr>
<tr>
<td>1826</td>
<td>1902</td>
</tr>
</tbody>
</table>

Wool imported from Germany 412,264 778,835 5,113,442 21,829,829
From which it appears that in 1800 the imports of wool
from Spain were 14 times as large as from Germany; whereas from Germany those of 1840 were 16 times as large as those from Spain, making a relative increase of
238 to 1 in favour of Germany in forty years.

Another table gives the proportions imported from 32
countries in different countries in nine successive years; by
which it appears that the wool from Germany has been
largest in most years. But of these countries there is no small proportion that may possibly
be grouped together, thus:

<table>
<thead>
<tr>
<th>Country</th>
<th>Import (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>27,776</td>
</tr>
<tr>
<td>France</td>
<td>20,744</td>
</tr>
<tr>
<td>Austria</td>
<td>19,184</td>
</tr>
<tr>
<td>Russia</td>
<td>12,424</td>
</tr>
<tr>
<td>Australia</td>
<td>9,162</td>
</tr>
<tr>
<td>Portugal</td>
<td>8,577</td>
</tr>
<tr>
<td>Belgium</td>
<td>4,034</td>
</tr>
<tr>
<td>Sweden</td>
<td>3,536</td>
</tr>
<tr>
<td>Denmark</td>
<td>3,434</td>
</tr>
<tr>
<td>Norway</td>
<td>2,934</td>
</tr>
</tbody>
</table>

Bales of Wool imported in

<table>
<thead>
<tr>
<th>Year</th>
<th>Import (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1803</td>
<td>1814</td>
</tr>
<tr>
<td>1815</td>
<td>1826</td>
</tr>
<tr>
<td>1843</td>
<td>1854</td>
</tr>
</tbody>
</table>

From Germany 72,776 62,553 60,032 21,413
From Spain 20,714 19,390 8,026 2,738
From Austria 19,184 16,277 19,762 2,738
From Russia 12,424 14,034 12,424 2,738
From Belgium 8,577 11,730 8,577 2,738
From Portugal 4,034 3,536 4,034 2,738
From Sweden 3,536 32,300 31,080 4,034
From Denmark 3,434 3,536 3,434 2,738
From Norway 2,934 3,434 2,934 2,738
From Sweden 3,536 60,226 86,049 71,934 90,081
The value of English wool from 1741 to 1790 was from 6d. to 13d. in the lower price being in 1773, the highest in 1772, and the mean price in the same period was 9d. per lb. In 1791 to 1840 the price of South Down wool varied from 7d. in 1829 to 36d. in 1839; while that of Kent long wool, within the same period, varied from 9d. in 1826 to 24d. in 1839. Broad and indigo dyeing, if British wool were removed; the exports were 18,000 lbs. in that year, 280,000 lbs. in 1827, and nearly 5,000,000 lbs. in 1840; thus showing that both the imports and exports of wool have prodigiously increased, when the commerce in this article is considered.

WOOL-TREE, a species of Eriodendron, a genus of plants belonging to the natural order Sterculiaceae. The wool-trees are large trees, with a spongy wood which is used for little besides making canoes in the districts where they grow. The leaves are palmate, and the flowers are large, red, white, or scarlet, and rising singly or in clusters from the sides or tops of the branches. The calyx is naked, irregularly 5-lobed, with the lobes usually thin; the petals are 5, joined together, and are connected with the column of the stamens, the latter being joined together into a short tube at the base, and divided into 5 bundles at the apex: these bundles are filiform, and each bears 1, 2, or 3 linear or anfractuous anthers at the apex, which have the appearance of one anther, and are either adnate or orifice and style. There are six species of Eriodendron, five of which are natives of America, and one of Asia and Africa.

E. anfractuosum has versatile anfractuous anthers; leaves large. The plant is shrubby and has a straight, and more or less wrinkled trunk. There is a species of South America, called E. sessilis,

F. Samannia has versatile anfractuous anthers; leaves with 5-7 oblong, quite entire, acuminate leaflets; the petals obsoletly spathulate, covered with glabrous down on the outside. The flowers are cream-coloured and are seated on the tops of the branches. This wool contained in the fruit is called in Brazil Samannia, and is used for stuffing pillows, bolsters, beds, &c. It is found in Brazil near the river Yupura.

E. Jannomitorum has versatile anfractuous anthers; a jointed style; it is a large, acute, entire leaflet; the petals reflexed; the tube of the stamens thickened at the top and entire, with the filaments 1-anthered. This plant is a native of Brazil, in the province of Minas Novas. It has white flowers smelling very like to those of the jasmine, and is contained in the fruit 2-3 in any of the countries. It may be grown in this country with ease. They may be propagated by cuttings which will root freely in sand under a hand-glass, but the plants which are produced from seeds thrive best. They do not usually produce their beautiful flowers till they are a large size in their native countries; therefore it can hardly be expected that they should flower in this country.

(Wool's Miller.)

WOOL, WOOL, or WOOL, is the common name of the species of Reseda, a genus of plants belonging to the type of the natural order Resedaceae, to which the common mignonette belongs. The genus Reseda, from seco, to calm or appease, because it is applied as a fomentation to relieve pain, is known by the flowers possess-...
WOOL AND WORSTED MANUFACTURES.

The manufactures in wool and in worsted are so closely connected, in reference both to their past history and to the industrial arrangements involved in them, that it will be convenient to treat of them together. The wool, whether in the form of worsted or woollen materials, is essentially the same; and the processes of dealing with it, though in some respects different, are in others very similar. The wool, therefore, will be treated of first, and the worsted manufacture will be considered afterwards.

WOOLEN MANUFACTURES.

The woolen manufacture, although dependent on the sheep, is independent of the climate. The English climate, on the contrary, is neither too hot nor too cold to suit the sheep, which is not the case with the sheep of other countries. The sheep, therefore, is always well supplied with wool, and has no occasion to travel far in search of pasture. The wool, therefore, is always abundant, and the manufacture is always active.

The English climate is, however, very favorable to the growth of the wool, and the wool is of a quality which is not found in any other country. The wool is grown in the counties of Yorkshire, Warwick, and Lincoln, and is known as English wool. The wool is of a fine quality, and is used for making shawls, blankets, and other articles of dress.

The wool is also used for making linens, and is known as English linen. The linen is of a fine quality, and is used for making tablecloths, sheets, and other articles of dress.

The wool is also used for making cotton, and is known as English cotton. The cotton is of a fine quality, and is used for making muslins, linens, and other articles of dress.

The wool is also used for making silk, and is known as English silk. The silk is of a fine quality, and is used for making scarves, shawls, and other articles of dress.

The wool is also used for making hemp, and is known as English hemp. The hemp is of a fine quality, and is used for making sails, ropes, and other articles of dress.
measures were passed, either by parliament or by cor-
porations, tending to cripple the free spread of the trade
and manufacture. Ireland suffered severely by this mis-
chievous system; for after being compelled to give up the
exportation of cattle to England, and on account of the com-
plaints of the graziers, she turned attention to the growth
of wool; but this offended the English wool-growers; and
if Irish cloths were sent to England, this roused the oppo-
sition of the English clothiers; so that from about 1640 to
that period there was one continuous struggle in
Ireland to bear up against the selfish policy of England
in respect to wool and its manufactures.

Throughout the greater part of the eighteenth century the
manufacture steadily increased in England, especially in
the south of England, on account of the inventions in spinning-machine which gave the extraordinary
imperative to the cotton-manufacture, that of wool could have been thrown comparatively into the shade; but the application of improved machinery has since increased the power of
the woollen manufacturers in England a more healthy tone
than they exhibited at the end of the last century. In a subsequent
page we give a few statistical details illustrative of the extent
and localisation of the manufacture.

PROCESSES OF THE WOOLEN MANUFACTURE.

It has been after explained that the woollen manufac-
ture relates to such fabrics as require the use of short or
fleecy wool. This wool undergoes a very large number of
processes before it reaches the weaving-manufacture. A
piece of broad-cloth as a representative of this manufacture
generally, the following are the successive processes by which it is produced:

1. Sorting the wool. 10. Spinning. 18. Fulling.
3. Dyeing (when dyed 12. Winding. 20. Interspinning, etc.

About one-half of these, in the most improved forms of
processing, are effected by machinery; and the other half
by hand labor.

The sorting of the wool is the first operation, and is one
of much importance, since the quality of the cloth depends
greatly on a due admixture of different kinds of wool. Each
pack of wool contains many different qualities, acci-
dental to the selection of the material. After the sorting
and picking, the wool is washed and scoured; and the
or other circumstances; and much tact and discrimination are
called for in the separation. The sorter has to make his
selection in relation to the fineness, the softness, the
strength, the colour, the cleanliness, and the weight of the
wool; and it is a matter of great interest to these qualities he attributes
the wool into many parcels, which receive the names of—
prime, choice, superior, second, third, coarsest, etc. With respect to
fineness, Dr. Perry found that the finest fibre of the wool
was an average of 1/4 of an inch; while the coarsest is that of Wilts.s, measuring
1/2 of an inch. All woolly fibres are thicker at one end than the other; but the less the difference in that respect, the more valuable is the wool. England, on account of the
strong points in Merino wool. According to the kind of good to be made, so do the several qualities in wool require to be studied; and hence the importance of the wool-sorter's
occupation.

When the proper kinds are selected, they are next
washed or scoured, to free them from the grease which in-
variably attaches to them. The wool is soaked in a lea of
steam line and soap at a temperature of about 180°, and
afterwards rinsed with cold water. In large manufactories the
wool is passed between the rollers of a powerful press
and scoured, to free it from nearly all moisture.

If the cloth is dyed in the wool, that operation succeeds
the scouring; but if dyed in the piece, many other pro-
cesses intervene; and it depends a good deal on the kind of
colour as to which plan is followed. Supposing the dye-
ting to be completed, however, the wool undergoes the pro-
cesses of 'willing' or 'wilting,' which is somewhat ana-
logous to the 'batting' or 'scutching' in the cotton-manu-
facture; the object being to open and disentangle the locks
of wool, and cleanse the fibre from seedy and other loose
impurities. The most improved machine for this purpose is that made by Mr. Lilly of Manchester, which acts in the following manner:—The willy is a kind of hollow trun-
cated cone, having an axis running through its centre; on
this axis are fixed a number of wheels of metal, each wheel
bearing on its circumference four longitudinal bars studded
with sharp spikes. The cone revolves with a rapidity of three or four hundred revolutions per minute,
within an outer cylindrical casing, whose inner surface is
streamed with a solution of soap and water. The mass of
an endless apron, with wool, which enters at the small
end of the cone, and travels to the larger end by virtue of the
centrifugal force produced by the rotation. As it passes onwards between the process the spin wool becomes
opened and disentangled, the fibres are then so'd and lock separated, and the impurities detached. But this is not all. When
the wool has reached the lower end of the cone, it passes
into a receptacle where a fan is revolving with great rapi-
dity, by which a current of air is generated strong
enough to blow away all the dust mixed with the wool; while at the
same time a kind of revolving cage distributes the wool in
a fine flat layer or stratum. Thus the same machine
disentangles the fibres, separates the impurities, blows them the dust, and arranges the wool in a
justly to work and against each other; the wires on one
cylinder are bent in a direction contrary to those in the
adjoining one; so that when all the cylinders are revolving,
and wool is applied to the first cylinder, it is thrown from
tooth to tooth, carried rapidly from cylinder to cylinder, separated completely from all entanglement, and finally given
forth in the shape of a delicate fibrous or sheet. It becomes wound on a revolving roller, or spinning-pot, or
spinning-wheel, it is as a carding-machine; but when it leaves the carding-machine it presents the appearance of slender rods, cylinders, or
pipes, which are called cardings.

These cardings are then spun into yarn for the use of the
woollen-weavers. This spinning being generally effected by means of the stubbing-billy or stub-
bing-machine, and afterwards by the common jenny or
mule-spinning machines; the stubbing-billy bringing the
wool to the state of a soft weak thread, and the spinning-
wheel giving it the proper firmness and hardness for
yarn. The following will give an idea of the appearance
and mode of action of the stubbing-billy, as described by
Dr. Ure: A is a wooden frame, within which is a move-
able carriage DDR, running on lower sides 2 and 3, on a
number of steel spindles, such as 1, 3, which receive a rapid motion from
a long cylinder, by means of separate cords passing round the
pulleys of the respective spindles; this cylinder is a
long drum of tin plate, six inches in diameter and the
whole breadth of the carriage. The spindles are placed in a frame so as to stand nearly upright at about four inches apart; their lower ends being so formed as to act as pivots. The drum enters the spindles with its centre a little horizontally before the spindles, or on the line of the spindle-pulleys. The drum
receives motion by a pulley at one end with an endless band
from a wheel E, which is placed on the outside of the
main frame, and which is turned by the power of the
horse at Q, who has his right hand applied to a winch; and by this
means the spindles are made to revolve rapidly. Each
Spindle receives a soft card or slubbing, which comes through beneath a wooden roller C C, at one end of the frame. A child is employed here, who brings the cards from the card-engine, and places them upon an inclined cloth between B and D. These cardings, being drawn beneath the roller, are then caught between two rails at G, and there held fast. The wire 7, the lever 6, and the wheel 5, are all concerned in the loosening of the carding from the rails at a particular period in the operation. The movement then is very similar to that in Har- greave's spinning-jenny; a small portion of each carding is allowed to pass between the rails or clasp; and this portion is then drawn out or elongated to the state of a thread by the recession of the carriage towards the other end of the frame. Meanwhile the spindles have been kept in motion, by which a slight twist is imparted to the thread or slubbing. The thicker wire 8, and the rail 4, assist in regulating the winding of the thread uniformly on the spindles. The process then is thus conducted: a child, called a 'piecer,' takes the cardings from the carding-machine, and lays them on the inclined apron; they are thence carried up beneath the roller and between the clasp, and the workman or 'slubber,' by managing his moveable carriage with one hand, and the wheel which turns the spindles with the other, elongates the 'carding' into 'slubbing,' and winds it on the spindles. The piecers are employed and paid by the slubber; and some years ago great cruelties were said to be inflicted on the children by the workmen for any neglect of their duty; but the inspectors of factories has removed such sources of discredit to the factory system.

In the spinning of the wool, which follows the slubbing, the kind of machines employed and the general character of the processes are so similar to those exhibited in the cotton manufacture, that it will suffice to refer to Cotton-Spinning and Spinning for details.

The process next following that of spinning is weaving, by which the yarn is worked up into a textile fabric. If it be a plain cloth, the loom employed is very simple in its arrangements; if it be a twill or an ornamental fabric, the loom is somewhat more complex; but the general arrangements will be sufficiently understood by a reference to Weaving. Hitherto woolen cloths have been principally woven by hand-weavers; but the power-loom is ever year becoming more and more applied to this purpose. Some of the cloths are woven as broad as twelve-quarters, to allow not only for the shrinkage occasioned in the subsequent process of fulling, but for an edging or 'list,' made either of goats' hair or of coarse yarn, into which the tenter-hooks are thrust in the process of tentering.

As the wool has been dressed with oil before spinning, and with size before weaving, it becomes necessary to cleanse it from these impurities immediately after the weaving.

This is the object of a second scouring process, in which the cloth is beaten with wooden mallets in a kind of vat or mill; soap and water being let in upon it first, and then water. Being then carried to the drying-mills, the calender-ground, it is stretched out by means of the calender-press, and then allowed to dry in the open air. It is then taken into a room and examined by hands who pick out all irregular threads, hairs, or dirt. And this it is ready for the important process of further fulling or felting, which imparts to woolen goods that permanent surface whereby they are distinguished from all other large mass of cloth folded into many plies is put into a fulling-mill, where it is subjected to the long-continued action of two heavy wooden mallets or stocks. Superficial part of the cloth has four fullings of three hours each, a third sort of soap being spread between each layer of cloth and time. During the violent peruscations which the cloth thus receives for twelve hours, the fibres, being at each stroke strongly impelled together, and driven into the closest possible contact, at length hook into each other the means of the little serrations on their surfaces, until they become firmly and inextricably united; each thread of the warp and weft, being so compacted with these are consequently to it, that the whole seems formed of one substance, not liable, like other woven goods, to unravel when cut with the scissors. The manner in which this compacting process the cloth manufacture is effected by beating, and the 'fulling;' in the hat-manufacture it is effected by pressing and rolling, and is called 'feltmaking;' but the two are now analogous in principle. This process thickens the cloth remarkably, but diminishes it both in length and breadth nearly one half.

In the fulled state the cloth presents a woolly and rugged appearance, to improve which it goes through the processes of teazling or raising, and shearing or cutting, the object of the first being to raise the ends of the fibres above the surface, and of the second to cut them off to a uniform level. The raising of the fibres is effected by thistle-heads, teazling-cards, or wire brushes. Teazling is the process of the driesseus fullum (Teazle), having small hooked points on their surfaces, which, by formerly used in the cloth manufacture thus: a number of these were put into a small frame with handles, and formed a kind of curvilinear comb, and were then passed horizontally, the direction of working being first parallel with the warp, and then parallel with the weft. From the trouble required to clean the bars of the teazles and

* Attempts have from time to time been made to produce a cloth fit for garments by the process of fulling only, without the aid of shearing; and some strength in the felt of a hat (similarly produced) would seem to answer well for such attempts. But hitherto the encouragement given to such as to render the project commercially successful,
filled with woolen fibres, from the weakening of their points by the water with which the cloth was saturated, and from the high price which the large demand enabled them to command in the market, numerous attempts were made from time to time to substitute metallic points; but we believe that from various causes the tealies are still preferred, and are now used in a more efficacious way than formerly. The tealies are arranged on a cylinder in a machine called a ‘gig-mill’; the cloth is stretched on two cloth-beams; the cylinder moves in one direction and the cloth in another, and the fibres become thereby worked or

combed up. The annexed cut shows the section of such a machine; where the cloth, passing from a roller $h$, round the roller $i$, comes in contact with the brushes $c$ on the wheel $a$, and afterwards passes round $g$ and $f$ to the roller $j$, the roller $i$ being so regulated by the pinion $n$ and the rack $m$ as to keep the cloth thoroughly stretched; and the revolving brush $j$ being so adjusted as to clean the teaing-cards $c$. In some recent machines the teaing-points are made of wire, to obviate the waste of 3000 natural tealies, which takes place in the dressing of one piece of cloth; but still the old tealies seem to maintain their supremacy.

When the ends of the fibres have been thus raised to the surface, they are next sheared or cropped, a process of great beauty and singularity. Originally this process was performed by means of large hand-shears, the cloth being stretched over a stuffed table, and the workman proceeding to clip the ends of the fibres in a regular and equable manner. This was an operation requiring great dexterity, and the men who worked at it, being in the receipt of good wages, were so alarmed at the introduction of shearing machines, in the early part of the present century, that serious riots occurred in the west of England. But the machines became by degrees extensively employed. They consisted each of a pair of shears, as in the hand-method; but all the movements were effected by machinery. More recently a machine has been introduced whose action is regulated on a different principle, as will be seen from the annexed cut: $b b b$ are disk-formed cutters, working against a thin bar of steel $a a a$, of a semi-circular form; which cutters, in their revolution travel round against the edge of the bar or blade in such a way as to shave off the filaments standing up on the surface of the cloth beneath. The cloth is acted upon by the shaded part. The wheel $c c c$, set in motion by machinery, imparts motion to the circular cutters attached to it through the medium of the rack $d d$. It is easy to see, that, where the machine travels along over the cloth, or the cloth travels along beneath the machine, every part of the fibrous surface is acted upon in precisely the same way by the double rotation of the wheel and the disk-cutters.

When the cloth has been raised and sheared (which operations are repeated two or three times for superfine cloth), it is brushed by a machine consisting of a system of brushes affixed to cylinders; the cloth being exposed at the same time to the action of the brushes and steam. A few subsequent operations are carried on, having for their object the imparting of smoothness, gloss, &c. to the cloth, preparatory to its being placed in the hands of the dealers.

A few remarks might here be made on the different kinds of goods coming under the denomination of ‘woollen manufactures,’ but it will be convenient first to notice the chief

**Processes of the Worsted Manufacture.**

The long wools for worsted fabrics, not requiring under go the felting process, pass through a circle of operations different from those hitherto noticed; since the object in view is rather to lay the fibres in a parallel position than to twist and entangle them one among another. All combing-wools are longer in fibre than the clothing-wools, but they are subject to the division into ‘long’ and ‘short’ combing-wools; the long, varying from six to twelve inches in length, being used principally for coarse worsted goods, and the short, from four to seven inches, being used for hosiery and some other purposes.

After the wool has been sorted, washed, and scoured from the adherent grease, and dried in a heated room, it is carried to a machine called a ‘plucker,’ containing a pair of spiked rollers, by the action of which the wool is cleansed, separated, and the fibres straightened, preparatory to the process of ‘combing.’ In hand-combing, which, until modern times, was the only mode followed, and which is rather laborious work, the proceedings are somewhat as follow:—The comber is provided with a pair of combs such as are here represented, a comb-post to which to

**Cloth-shearing Machine.**

**Wool-Combs.**

attatch the combs, and a comb-pot or stove for heating the teeth. Each comb consists of two rows of steel teeth, $a$, one row longer than the other, inserted in a wooden stock or head $c$, from which protrudes a handle $d$, and sometimes a direction of the teeth. Some combs have three rows of teeth. The workman first heats the teeth of one of the combs in the stove, and fixes it in the post, teeth uppermost. He then takes a small handful of wool, consisting of about four ounces, sprinkles it with oil to increase the pliancy and ductility of the filaments, and works it about between his hands to equalize the oil on every part of the fibres. The comb then takes half the bundle of oiled wool, and dashes it on the upturned teeth of the comb, till it is all deposited there, and caught between the teeth sufficiently firm to be retained. The comb with its wool is placed, points downwards, in the stove; and the
comber next fixes the other heated comb in the comb-post, lays the other half of the bundle of wool on it, and places this likewise in the stove. When both combs with their supply of wool are properly warmed, the comber holds one of them over his knee with his left hand, while seated on a low stool, and with the other comb, held in his right hand, he combs the wool upon the first, by introducing the points of the teeth of one comb into the wool contained in the other, and drawing them through it. This is repeated till the fibres are laid parallel. The comber always begins by introducing the points of the teeth of one comb first into the extremity of the fleece contained in the teeth of the other, and he then advances deeper at each succeeding stroke, till at length the combs are worked as closely as possible without bringing the teeth in actual collision: this plan is followed to prevent the breaking of the woolly fibres by too powerful an action in the first instance. These fibres being laid parallel, the teeth of the second comb, which constitutes about one-eighth of the length of the fibres, is unfit for spinning into worsted, and is consequently applied to other purposes.

At a worsted factory in the north we saw a most efficient combing-machine, of which a portion is represented in the annexed cut. It consists of two wheels of large diameter, like the one here sketched, having wires placed round the circumference, parallel with the axis, and pointed at one end so as to act like teeth. A boy, sitting on the ground, strikes wool on the points of the teeth in one wheel, so as to make it adhere to and between them. The two wheels are then made to rotate, the distance between them being such that the teeth of the one can draw through or comb the wool lying on the teeth of the other. This is effected with great rapidity; and when the combing is completed, the top or combed worsted is taken off by a boy or girl in a continuous stream from the upper part of the wheel, while the * noils* or uncombed part is removed by another boy.

When the wool has been combed either by hand or machine, it is transferred to the breaking-frame, the object of which is to open out any fibres which may have escaped the action of the combs. In this machine the wool, passing between rollers, is exposed to the action of a kind of endless comb, travelling round two rollers distant from each other; and the arrangements as to relative velocities are such that the wool becomes somewhat drawn out as well as sheared parallel, and leaves the machine in the form of a roll or narrow belt.

The breaking being thus effected, the sliver of wool proceeds to a large bobbin or cylinder, round which it is tapped into a continuous roll. It is then passed a second time through a breaking-frame, having teeth finer and more closely set than the former. The soft woolly ribbon is then subjected to the action of a machine analogous in principle to the drawing-frame of the cotton manufacture; the object being to extend the length, diminish the thickness, and equalise the number of fibres of the sliver. Hitherto the woolly fibres are merely slightly coherent, without having any twist; but they are now passed through a roving-machine, preparatory to the process of spinning. The working parts of this machine are slightly shown in section in the annexed cut. The wool, carried on a cylinder A, whose surface is studded with points or teeth, another instance of the extensive application of the combing process in the long-wool manufacture. The wool, after being acted on by these teeth, passes between the pair of rollers B, where it is

It is pressed by the upper roller being urged downward by the weight C. Of these rollers the upper one is of wood covered with leather, and the under one of iron, covered at the points with the axis. D, and this latter is urged to rotate faster than the feeding-roller F, it necessarily follows that the sliver of wool becomes elongated to a size or still greater tenacity while passing between them, and it is thereby caught by a second pair of rollers E, kept in contact by the weight D, and as these latter still revolve more rapidly than the former, the sliver is still more elongated until its thickness is so small that the fibres can scarcely cohere. But in order to give them the requisite cohesion, they are slightly twisted by the bobbin and G, that beautiful contrivance which is so extensively adopted in the textile manufactures. One fork or leg of the rotating flyer G is hollow or tubular, and down the tube the delicately corded wool passes; then, by the spin, rotation of the flyer, the wool or roving becomes wound on the spindle of the bobbin concentric with the eye.

The straight or rectilinear motion of the roving while approaching the flyer, combined with the circular motion of the flyer itself, imparts a twist to the roving, sufficient to enable it to undergo the process of spinning. The spools of the worsted bobbins are so close a resemblance to that of cotton, as described in Cotton-spinning and Spinning, that a reference to those articles will suffice to convey a general notion of the process. When spun the worsted yarn is wound on a reel, and these reels being made into hanks of 560 yards each. These hanks receive denominations according to the number of them which go to a pound, and the yarn derives its name in like manner, thus: 'No. 24' yarn has 24 hanks to the pound. In instances where a single worsted yarn is wound on a reel, the hanks are tied up into pots; the pots are combined into bundles; and the bundles are made into bales of 240 lbs. each, ready for the market.

Here terminate the operations of a worsted mill, for the dyeing of the yarn, and the weaving into the various kinds of textile fabrics, lead us to other departments of industry.

[Dyeing; Weaving.]

**Varieties and Places of Woollen and Worsted Manufactures.**

When it is considered that woollen and worsted goods differ principally in the length of fibre, it is easy to imagine that many varieties may be produced, according to the extent to which this separation is carried out. The varieties too, in which the warp and weft threads are made to interlace, as explained in Weaving, naturally lead to the production of many different classes of goods. There are four conditions, viz. the length of fibre, the appearance of the fibre, the quality of the material, and the width or size of the piece. All these factors, combined, give rise to the innumerable and fancifully-named kinds of woollen and worsted goods. Blankets, flannel, stuff, Merinos, mousseline-de-laines (wool muslin), beavers, tamisies, shawlon, sox, muslins, camlets, lastings, bazaars, and a host of other names, some of which are now nearly or quite out of use, and are giving...
way to others, points to the diverse applications of long-wool in the production of woven fabrics; while kerseymeres and other names indicate distinctions in the felted-wool goods. But besides these diversities, there are others depending on various circumstances; such as the admixture of woolen with worsted, or of either of them with cotton or silk, in the same fabric; the dyeing of the material, sometimes in the piece, sometimes uniformly in the yarn, and sometimes in a party-coloured mode called 'clouding;' and the variety of processes to which they are subjected, by the fulling process; whereas kerseymeres is a twilled fabric, similarly fulled. Serge is twills, having worsted warp and coarse woolen weft. Blankets are made of very soft yarn, afterwards dyed and printed. Many varieties of coarse cloth are of analogous structure. Bombazens is a twilled mixture of worsted and silk; whereas Poplin is an untwilled mixture, showing more silk than worsted at the surface. Modern goods called Soarones and Ornaments are made of woolen, sometimes mixed with cotton, and afterwards printed. Stuff is made wholly of worsted; while Merino is a fine woolen twill, sometimes printed. The material called Cashmere, if properly so named, is made of the shawl-warp, and worsted weft, and the fabrics so called are made of sheep's wool. Cloth is a mixture of woolen warp with silk warp, and is generally printed. Mousseline de-laine was originally all wool, but is now frequently mixed with cotton, and generally printed. Norfolk or Huddersfield are the chief varieties of cloth exposed of wool and silk, something like challis, but without being printed. Crepe de Lyon is formed of worsted and silk; and Italian set of worsted only. These examples are only intended to indicate the sources of the varieties of worsted goods, for too minute a description of the varieties themselves would be nearly impossible. This is particularly the case in respect to Washcoatings, where fancy-woying adds another to the sources of diversity.

Various details have been given, at different times and in different places, respecting the distribution of these manufactories, in respect to the towns where they are carried on, and the goods produced at each; but the most satisfactory, perhaps, are those given by Mr. McCulloch, in the 'Statistical Account of the British Empire,' and from that work we shall follow the following order.

The West Riding of Yorkshire, the most important clothing-district in England, exhibits an area of nearly 40 miles by 20 occupied by clothing towns and villages. Leeds, Bradford, Batley, Huddersfield, Dewsbury, Ossett, Wakefield, and Dewsbury, are among the chief manufacturing towns. Mixed or coloured cloths are made principally in the villages west of Leeds and of Wakefield; white or undyed cloths are made chiefly in the villages occupying a belt of country extending from near Wakefield to Shipley. These two districts are largely the spun worsted required for the various manufactures. Stuff is made at Bradford, Halifax, and Leeds; and narrow cloths at Huddersfield. Saltburn furnishes broad-cloth and kerseymeres. In the neighbouring towns of Wellington, Denby Dale, and Elsecar, and among the villages called 'boddy mills,' employed in the manufacture of yarn from old woollen rags, which is used in the weaving of some coarse kinds of goods.

The West of England takes rank next to Yorkshire, and forms the chief district in the manufacture of stockings and similar goods. The counties of Devon, Somerset, and Cornwall, are the most important. The manufacture is carried on in a district called the Bottoms, and in other parts of the county; the town of Stroud being a kind of centre for the whole. There are more than a hundred woollen factories in Gloucestershire; besides the numerous villages of small houses inhabited by hand-loom weavers. Wilts, however, produces only fine cloths, at Bradford, Trowbridge, Westbury, Melksham, Chippenham, and the surrounding villages; while cloth of various kinds is made at Witton, Warminster, Hayti-

bury, and Calne. Taunton, Frome, Tiverton, and the surrounding villages constitute the Somersetshire clothing district. Devonshire and Dorset have little woollen manufactures.

There is another district as distinctly marked from the two just noticed as they are from each other: this is the Norfolk district, which was long the principal seat of the 'stuff' or worsted manufacture. Indeed the name 'worsted' is said to have been derived from the name of a place in Norfolk, though in later times we are not wanting those who refer it to Ostades, the name given to them by the early Flemish weavers. Bombazeens, crapes, camlets, and shawls have constituted the chief fabrics for which Norfolk has been celebrated; but the manufacturers in the West of England are not declining, chiefly on account of the absence of coal, which has caused a large share of the operations from both Norfolk and the West of England to be transferred to Yorkshire; and indeed it is said that none of the yarn now used in Norfolk is spun at Bradford in Yorkshire.

These are the three great districts engaged in the consumption of wool; to which may be added Leicestershire, where nearly all the worsted stockings are made, employing ten or twelve thousand stocking-frames. But besides these, there are minor articles of manufacture which seem to have become located in particular spots in various parts of England. Draggets and long-els, the latter of which were formerly much purchased by the East India Company, are made in Devon. Riding cloths are made at Modbury in Devonshire. Baize, which used to be made largely in Essex, is now chiefly made at Rochdale. Salisbury produces flannels; and Witney and Chichester blankets. Kidderminster, Wilt, Cirencester, Worcester, and Boston, are the chief towns of Worcestershire, and the cloths of the carpet-manufacture.

Coarse woollens and druggets are made largely at Kendal, Keswick, and Ambleside. Druggets, shalloons, and sergees are made at Andover, Basingstoke, and Alton; worsted shag at Banbury and Coventry; rugs at Burford; feesby and Goodworth at Godalming; bunting and crapes in many parts of Suffolk.

In Wales the principal manufactures relating to wool and worsted are 'strong webs' or 'high-country cloths,' 'small webs' or 'low-country cloths,' flannels, stockings, wools, wigs, and gloves; the chief counties being Montgomery, Merioneth, and Denbigh. The 'strong webs' are used principally for workmen's jackets, ironing cloths, &c.; while the 'small webs' are largely used for slaves' clothing in the West Indies.

In Scotland the fine woollen manufacture is upon a limited scale; but a good deal is done at Aberdeen, Stirling, Galashiels, Jedburgh, Hawick, Inverness, Kirkmarnock, and Paisley, in the production of various kinds of woolen goods, for home consumption, passing under the name of 'polo-garn,' 'low-country cloths, worsted goods, and some plaidings, clan-tartans, woolen hose, blankets, flannels, and especial kinds of shawls. The manufactures of woollen and worsted goods in Ireland, owing to the unsettled state in which that country has unfortunately been placed, are quite insignificant.

**MODES OF CONDUCTING THE MANUFACTURE AND SALE.**

Different usages prevail in different counties respecting the connection between employers and employed, buyers and sellers, in the woollen and worsted manufactures. In the West of England the general plan of operation is this:—

The master-cluthier buys his foreign wool from the importer, and his English wool from the wool-stapler. He employs in all the different processes through which the wool passes in the course of manufacture, the whole number of persons, who sometimes work at their own houses, and sometimes in the factory of the master-cluthier. Each worker confines himself exclusively to a particular branch of the manufacture; and this has been supposed to have led to the exact distribution of the work in the West of England.

A second mode is on the factory-system, now extensively adopted in the West Riding of Yorkshire. The master-manufacturer, who sometimes possesses a large amount of capital, employs a great number of workmen in the various branches of the manufacture, from the grinding of flax to the finishing of the cloth, and also the managing of the carpenters and other services. In this system, as in the master-cluthier system, the workman has no property in the material on which he is employed.

In the domestic system, which was the original one adopted, the arrangement is altogether different.
this system the manufacture is conducted by a number of small masters, who are generally possessed of very limited capital, and who, besides their business as manufacturers, mostly occupy farms of a few acres, partly for the support of their families, and partly for the convenience of their manufacture. The domestic cloths in have in their houses from one to four looms, on which they employ themselves, their wives, and children, and perhaps other assistants. During their absence from work, their wives, children, and servants often take out into the fields to work. Formerly these cloths used to carry the wool through all the stages of its manufacture, till it was brought to the state of undressed cloth; but of late years they have united the two stages of quantity of public, which are established in and among the clothing-villages, for the performance of some of the processes; these mills having been erected on a joint-stock principle, by shares of 50l. or 100l. each, principally subscribed by the domestic clothiers, and also to be extensively employed in the woollen manufacture, in the early part of the present century, the domestic clothiers became violently excited, under the apprehension that their trade would be taken from them by the newly-invented machines. A Parliamentary committee inquiring into the probable operation of machinery in respect to the well-being of the domestic clothiers; and after examining numerous witnesses they made a Report, in which they detailed the distinctive features of the factory and the domestic establishment as to the difference of systems, instead of rivaling, are mutual aids to each other; supplying the other’s defects, and promoting the other’s prosperity. ‘Experience,’ says Mr. M’Culloch, ‘has proved the correctness of these conclusions. The number of factories and the manufacture of the woollen cloth produced by them, have both increased since 1806; but, as the number of factories, and the quantity of cloth made in them, have increased still more rapidly, the former constitute, at present, a less proportion of the trade.’

As respects the sale of the cloth, halls have been established for this purpose at Leeds, Halifax, Bradford, Huddersfield, and other towns, which are attended on the public holidays by thousands of the smaller class of manufacturers. The halls are divided into long walk or galleries, consisting of two rows of stands, each of which is marked with the name of the person by whom it is occupied. On these stands the cloth is exposed for sale; and when the markets open, the manufacturers take their stations at the stands behind their goods, the merchant-buyers passing to make their purchases through the avenues between the rows. The time during which the halls are open is limited usually to about one hour and a half; but in the intervals of the day, a very large number of buyers pass through them. There are two cloth-halls at Leeds, one for the sale of mixed cloth, containing 1800 stands, and one for the sale of white cloth, containing 1200 stands. These halls are appropriated exclusively to the use of those who had sold their cloths at the previous sales, and to the business of cloth-making; they are managed by trustees, and many of the stalls are the freehold property of the persons who occupy them. All the cloth sold in the halls is rough and undressed. Those by or for whom it is bought have what are termed ‘fittings-shops,’ where the cloth is shorn, dressed, and fitted for use. This is analogous to a system pursued by the bobbin-net manufacturers at Nottingham, where the net is sold by the maker in the rough state as it leaves the loom, and purchased by other parties, who singe, dress, and finish it ready for the net.

For the sale of various kinds of goods woven in North Wales there is a market held at Shrewsbury; but it is customary for the drapers of that town to travel into the country and buy goods wherever they find them. It is there usual also for the principal manufacturers to keep several at the greater part of the year, among the manufacturers, with whom they get acquainted, assist those who are poor with loans to purchase wool, and superintend the making and dressing of the goods. At Welshpool a flannel-market is held once a fortnight. To this market the manufacturers use to bring their goods; but now a set of middle-men go about the country, and buy all the flannels the manufacturers have to sell. At the Welshpool market nothing is sold on credit, every piece being paid for as soon as measured; and a similar system prevails in the other woollen markets of Wales.

**Extent of the Manufacture and Numbers of Operatives.**

The Custom-house returns enable us to form something like a correct opinion of the quantity of cloth which is manufactured in England yearly; but the amount of capital invested and the number of persons engaged have been very variously estimated. In 1778, the writer of a pamphlet on the subject of wool estimated the number of persons engaged in the woollen manufacture at 150,000, and their wages at 11,757,508l. per annum; this estimate was made by Dr. Campbell in 1774, thought that there might probably at that time be 1,000,000 persons employed in the manufacture in England, that the value of the wool used was 3,000,000l. per annum, and that this value was increased to 12,000l. per annum by the processes of manufacturing. In 1800 Mr. M’Culloch and Mr. Alexander, manufacturers, in committee before the House of Lords, made the extravagant estimate that there were 1,500,000 persons directly engaged in the manufacture, that the value of the wool used was more than 6,000l. sterling, and that of the manufactured goods 20,000,000l. per annum. In 1815 Mr. Stevenson reported that there were half a million persons employed, receiving 8,500l. per annum wages, and that the value of the raw material was 18,000,000l. per annum. Mr. M’Culloch (Statistical Account, vol. ii. p. 627) forms an estimate on the following grounds:

—That there are about 150,000 families engaged in the manufacture yearly; that this may be worth about 7,500,000l. that the value of the manufactured goods is three times that of the raw wool, making therefore 22,500,000l. per annum; and that this value is thus made up:

- Raw material 7,500,000l.
- Oil, soap, dye-stuffs, &c. 1,600,000l.
- Interest, profit, &c. 4,650,000l.
- Wages 8,750,000l.
- 22,500,000l.

And dividing this amount of wages at the rate of 52 weeks to each operative on an average, he arrives at the number 334,600, which he thinks a probable approximation to the number of persons employed in the whole manufacture in this country. Mr. Chapman (one of the Assistant Hand-Loom Commissioners, and the author of the able article on ‘Wool, and its Manufacture,’ in the new edition of the Encyclopaedia Britannica) makes an estimate in that treatise which agrees pretty nearly with that of Mr. M’Culloch; although at the first glance the two estimates seem discordant. He thinks that, in 1819, the number of families directly dependent on the manufacture were:

- In the West Riding of Yorkshire 85,696
- In the West of England 20,851
- In Norfolk and Kendall 17,570
- In the hosiery district 20,164
- In all other places 20,000

103,861

Then, taking the average number of persons in a family at 5, he arrives at an aggregate of 874,605 persons directly supported thereby. He further supposes that the number must have increased, by 1811, to 228,124,424 individuals. Mr. M’Culloch’s estimate is of the number of persons employed, while Mr. Chapman’s is of the number of persons supported; and this may explain the apparent discrepancy between the two estimates. To the number of the manufacturers proper, thus:—228,298 families, earning on an average 17s. 6d. per week each family, which amounts to 10,208,594l., and the relation between this and the other items of the table, thus states:

- Value of wool employed 10,000,000l.
- Oil, dye-stuffs, soap, &c. 1,500,000l.
- Wages 10,290,594l.
- Wear and tear, profit 4,353,311l.
- 22,500,000l.

We shall conclude with a few extracts from Mr. Bache’s tables. For about a century, from 1725 to 1830, all the cloths made and sold in the West Riding were

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sured and stamped by officers appointed for that purpose; and from the returns made, it appeared that there were full, in the West Riding, the following number of pieces of broad and narrow cloth: the years named:

<table>
<thead>
<tr>
<th>Broad</th>
<th>Narrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1726</td>
<td>26,671</td>
</tr>
<tr>
<td>1728</td>
<td>38,619</td>
</tr>
<tr>
<td>1737</td>
<td>56,637</td>
</tr>
<tr>
<td>1738</td>
<td>33,530</td>
</tr>
<tr>
<td>1740</td>
<td>72,573</td>
</tr>
<tr>
<td>1743</td>
<td>93,733</td>
</tr>
<tr>
<td>1745</td>
<td>158,792</td>
</tr>
<tr>
<td>1746</td>
<td>240,770</td>
</tr>
<tr>
<td>1747</td>
<td>33,590</td>
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<tr>
<td>1748</td>
<td>290,269</td>
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<tr>
<td>1749</td>
<td>158,792</td>
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<tr>
<td>1755</td>
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<td>1756</td>
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<td>1757</td>
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<td>1762</td>
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<td>1764</td>
<td>33,590</td>
</tr>
<tr>
<td>1765</td>
<td>290,269</td>
</tr>
</tbody>
</table>

The woollens and worsteds exported in 1830, 1830, and 1840, or rather to January 5th in the following years, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Wool</th>
<th>Spun yarn</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>2,051,000</td>
<td>4,930,373</td>
</tr>
<tr>
<td>1831</td>
<td>2,051,000</td>
<td>4,930,373</td>
</tr>
</tbody>
</table>

The most striking features in this table are the large increase in the exports of sheep's wool, spun yarn, and mixed wool and cotton fabrics.

In the parliamentary documents for 1842, the declared value of manufactured wool exported in 1841, independent of raw wool, is set down at £5,748,673. Of these exports there were sent to the United States the value of £1, 521, 987.; to Germany, £63, 676.; to the East Indies and China, £62, 710.; to British America, £5, 344.; to South America, £46, 074.; to Brazil, £29, 484.; and to Holland, £51, 695.; the other countries enumerated, twenty-three in number, having taken comparatively small quantities.

The importance of peaceable relations between this country and America is shown—in this, as in a hundred other instances—by the fact that one-fourth of all our exports in woollens, except those of the United States, are destined to that country. It is worthy of note that, in 1841, less than 7, 544,196 lbs. of British wool were exported to Belgium alone, out of a total export of 5, 471,235 lbs.

WOOLLIM, WILLIAM. This excellent engraver was born at Maidstone, in Kent, in 1725. He learned his art of John Tinney, an obscure engraver in London, but he soon adopted a style of his own, acquired early a great reputation as a landscape engraver, and was appointed engraver to George III. No artist ever used together more effectually the etching-needle and the graver: in foliage, water, and in rocks, Woollett was particularly successful, and is still unrivalled; but in figures, and especially in flesh, he was less so. In the latter part of his life Woollett took to histriography, and was also the engraver to whom some of the finest plates of the English school of engraving can boast: the Death of General Wolfe, and the Battle of the Hogue, both after West, are considered his best historical pieces, and they are certainly placed first in the panorama of his works. Of his landscapes his masterpieces are those which he engraved after Wilson: they are nine in number, namely, Phaeton, Niobe, Celadon and Amelina, Ceyx and Alcione, Snowdon, Cicero at his Villa, Meleager and Atalanta, Apollo and the Seasons, and Solitude, a companion-piece to Cicero at his Villa. In the last plate he was assisted by Ellis, and in the Meleager and in the Apollo by Poucney. He engraved also after Claude, Zuccarelli, the Smiths of Chichester, Stubbs, and others, and he executed some of Reynolds's portraits from life. Woollett died in London in 1785, aged 30, and was buried in old St. Pancras churchyard; there is a monument to him in the church of Westminster Abbey. He is spoken of as a man of admirable character, and a very amiable disposition. The following anecdote, said to have been told by West (Library of the Fine Arts, vol. ii.), evinces an extraordinary spirit of freedom and patience: Woollett, when he had finished his plate of the Battle of the Hogue, took a proof to West for his inspection: at first the president expressed himself perfectly satisfied and with the plate, but on conferring on the engraving, he observed that in some parts alterations might be made, and in others additional colour might be added, which, would, in his opinion, improve the effect of the plate; and taking a port-charge with black and white chalk in it, he examined the engraving, and reduced the work produced, remarking at the same time that it was of no great consequence, but it might improve the appearance of the plate. Woollett however immediately consented to make the alterations and additions pointed out,—But how long wilt it take you, Mr. Woollett? said the president. About three or four months, replied the engraver: and the patient creature, said West, when relating the circumstance, actually went through the additional labour without a murmur.

WOLSTON, THOMAS, was born in 1669, at Northampton, and was the son of a respectable tradesman of that city. He went from a grammar-school to Sidney Sussex College, Cambridge, where, after taking the degrees of Bachelor of Arts and Master of Arts, he was elected a fellow of his college, and afterwards entered into holy orders, and in due time took the degree of Bachelor of Divinity. In 1705 he published his first work, entitled ' The Old Apocalypse of the Christian Religion against the Jews, and entitled to receive the true interpretation.' This publication was followed by others from him till after an interval of fifteen years spent in laborious study of the works of the fathers within the walls of his college; and in the year 1720 he published three Latin tracts, one of which, entitled Res Jesu Christi gestas, per Mystagogum, was an endeavour to prove that the letter of Pontius Pilate which had been transmitted by the fathers was a forgery, without denying that a letter had been written to Tiberius; and the two others were entitled, In the name of the apostle and evangelist John, and Apologia, to Doctors Whitby, Waterland, and Whiston, on the interpretation of the Scriptures. About the same time he published two tracts, in the form of letters to Dr. Bennet, and under the name of Aristobulus, one on the question whether the Quakers do not the nearest of any other sect of religion resemble the primitive Christians in principles and practice? and the other being ' A Defence of the Apostles and Primitive Fathers of the Church in their Allegorical Interpretation of the Law of Moses, against the figure of the city of Jerusalem,' and ' Defences of the Apostles and Primitive Fathers of the Church, in their Allegorical Interpretation of the Law of Moses, against the figure of the city of Jerusalem,' and he immediately followed up these publications by writing an answer to them. The letters to Dr. Bennet, and the answer to the letters, abounded in attacks upon the clergy, which, together with the arguments for the interpretation of the letters, were prevailing as well the latter of the two letters, as his previous letters addressed to Doctors Whitby, Waterland, and Whiston, exposed Wolstton to much suspicion and attack from the clergy. His next publication, in 1722, was not calculated to give offence, being a tract entitled ' The exact Fitness of the Time in which Christ was manifested in the Flesh, demonstrated by Reason, against the Objections of the Old Gentiles and of Modern Unbelievers,' which had been written twenty years before. It was answered by William Whiston in 1723, and 1724 he published four pamphlets, under the title of Free Gifts to the Clergy, and then an answer to them, all directed against the clergy. In 1726 he entered into the controversy raised by Anthony Collins's Grounds and Reasons of the Christian Religion, and published two tracts; one of a work to which he gave the name of Moderator between an Infidel and Apostle, and two Supplements to the Moderator. The lengths to which he carried his allegorical interpretation of the Scriptures in these publications, denying the reality of the miracles wrought by Christ, brought upon him a prosecution by the attorney-general. This prosecution was stopped at the intercession of Mr. Whiston. Nothing daunted, he proceeded in 1728 in proclaiming his views as to the allegorical character of the miracles in ' Doubts on the Miracles of Christ,' which were addressed to six bishops—Gibson, bishop of London; Chandler, bishop of Lichfield; Smallbrooke, bishop—
of St. David's; Hare, bishop of Chichester; Sherlock, bishop of Bangor; and Potter, bishop of Oxford. In these discourses much was said against the clergy, and against the clergy in general, was mixed with the heterodox doctrine which they were wont to support; and the tone of ridicule and banter in which the miracles were treated of aggravated the offence given. Woolston was the object of detraction, and his defence, defended himself on his trial, was sentenced by the court of King's Bench to a year's imprisonment and a fine of £100. At the expiration of the year, being unable to pay the fine, he continued in confinement. Attempts were made by some of his friends to procure his release; but Woolston would not consent to give security not to offend again by similar writings. By the assistance of a brother, an alderman of Northampton, he was enabled to purchase the liberty of the rules of the King's Bench, and was partly supported by the public subscription, although the remainder of the fine was not paid. He had lost his fellowship at Cambridge some years before by non-residence. He died on the 27th of January, 1733, after a very short illness. He was buried in St. George's Churchyard, Southwark.

Royal Institution, a market-town in the county of Kent, on the south bank of the Thames, 8 miles below London by the road, 6½ miles by the river, which is there three-quarters of a mile wide. A tract of land in Essex, on the north bank of the Thames, is included in the parish of Woolstoum Green, and is 3 of an acre.

The town consists chiefly of a street nearly a mile long, on the bank of the river, with other streets diverging from it chiefly to the south. In this long street and the other streets immediately connected with it, which constitute the main centres of the town, many of the houses are old and small, and the arrangement of the streets is irregular and inconvenient, but in the higher and more modern part of the town there are several new streets of handsome houses. The streets are lighted with gas. The church is a plain building with a square tower: it is large enough to accommodate 1500 persons. The living is a rectory, in the gift of the bishop of Rochester, of the net annual value of £700, out of which £100 is paid to a curate. The Ordnance Chapel is on the road to Plumstead, and another chapel in the Royal Hospital is erected at both in the appointment of the Board of Ordnance. There are places of worship belonging to the Methodists, Baptists, Roman Catholics, and other classes of dissenters. There is a Mutual aid, a boarding-school, and a school under the patronage of the British and Foreign Bible Society.

The population of the town and parish of Woolstoum, in 1801, was 9,282; in 1811, 17,064; in 1821, 17,008; in 1831, 17,061; in 1841, 25,785, of whom 14,063 were males, and 11,722 females; of which return this includes the naval and military establishments. They were, in 1841, 3034 houses inhabited, 83 uninhabited, and 38 building. The following is the list of the government establishments, with the number of persons in each when the census was taken:

Royal Artillery Barracks, 2354 males, 506 females.
Royal Marine Barracks, 336 males, 70 females.
Royal Sappers and Miners' Barracks, 123 males, 33 females.
Royal Arsenal, 55 males, 101 females.
Her Majesty's Dockyard, 50 males, 49 females.
Royal Ordnance Hospital, 281 males, 12 females.
The hulks Warrior, Unit, and Justice, 1153 males, 12 females.

The population has no trade, except such as arises from the wants of the resident population.

The importance of Woolstoum has arisen from its Dockyard, from the government foundry for cannon having been established there, and from its having been made a great depot for naval and military stores. Of these and the other government establishments at Woolstoum the first was——

The Royal Dockyard, which was formed in the reign of Henry VII. The Harry Grace à Dieu, the largest vessel which has been constructed, was built there in 1515. The Dockyard was greatly enlarged and improved by Queen Elizabeth, and by Charles I. It now commences at the village of New Charlton on the west, and extends along the south bank of the river almost a mile to the east, very near to the Royal Arsenal. It contains two large dry dores, a basin 400 feet long by 300 feet wide, capable of receiving the largest vessels, extensive ranges of gun-sheds, storehouses, mast-houses, &c., and a large building provided with powerful steam-engines for manufacturing every article of iron used in the service, and capable of being made the largest. Each department is under the superintendence of a separate officer, and the whole under the direction of the Board of Admiralty.

The Royal Naval Gun foundry for casting cannon was formerly in Moorfields, and was removed to Woolstoum soon after a great explosion in 1716, occasioned by moisture in the moulds. Andrew Schalch, a young German founder, who had been allowed to look at the moulds, gave warning of the explosion, and, was he not Colonel Armstrong, surveyor-general of the ordnance, others to leave the ground; the operations proceeded with; the explosion took place, much damage was done, and several lives were lost. The government especially resolved to erect a separate building, which was done. The London, and Schalch, having been examined as to qualifications, was appointed to select a suitable place.

He chose the Warren at Woolstoum, the new work erected under his superintendence, and he was appointed Master-Founder for the purpose of it, which he held during sixty years. He died in 1760, at the age of 90, and was buried in the churchyard at Woolstoum.

The foundry for cannon forms one of the principal departments of the Royal Arsenal. It has four air-rooms, in which are the lathe and forging shops. In 1809, a year in which war was carried on with great activity, 385 guns were cast, and 343 in 1810. The air-rooms are cast solid, and bored and turned in a separate building: the gun is moved to round it, and upon being finished, is placed in a proper position for finishing the exterior is performed at the same time. The gun is ultimately proved by firing it on the靶, and in the case of the greatest guns, in the special range of the military range.

Another department of the Royal Arsenal is the Store-Room, which is near the foundry. It contains a plan or model of every article used in the artillery service: the machinery for grinding gun-powder, etc.; the store of iron, gun-cotton, shot, powder, and other ordnance material; and other articles of military manufacture are prepared. In other parts of the Arsenal are about three millions of cannon-balls and shot-shells, arranged in pyramidal groups.

The Storehouses of the Royal Artillery are to the east of the Royal Arsenal: they generally contain complete outfits for 10,000 men, including the muskets, pistol, shot, shot-shells, whips, &c. From the upper part the storehouses may be seen in the field below about 1500 pieces of ordnance arranged according to their sizes. The Royal Artillery Barracks are on the north side of Woolstoum Common. The length of six ranges, is 1200 feet long, with an elegant entrance tower in the centre. A spacious chapel in the east end has accommodation for 1000 persons. The other parts of the building consist of the library and reading-rooms, and a splendid suite of apartments, in which balls and other entertainments are given. The interior is divided into two quadrangles, with stables and barracks for the horse-artillery and a large riding-school. The whole establishment can accommodate from 8000 to 4000 men.

The Royal Military Academy is on the west side of Woolstoum Common, towards which it presents a broad front; the central tower, with its four domed turrets, is a picturesque object in the distance. The Academy was established as early as 1719, but the present building does not entirely date from that period. It was built for young men under instruction in whatever is requisite to qualify them for artillery officers and engineers. The Master-General of the Ordnance for the time being is the governor. The resident officers are, a lieutenant-governor and inspector, a professor of fortification, masters of drawing, languages, &c.

The Rotunda, south of the town, on the west side of Woolstoum Common, is a depository for models connected with military and naval architecture, spectra of maps, arms, military machines, and a variety of other things connected with military and naval affairs. The building is o
a tent-like form, with 24 sides, the diameter being 120 feet. It was originally erected in Carlton House Gardens, by George IV. when prince regent, for the reception of the allied sovereigns when they visited England in 1814, and was afterwards presented to him by the garrison at Woolwich. The centre of the cone which forms the top of the building is supported by a pillar, round which are arranged specimens of old English weapons, such as matchlocks, wheel-locks, bills, partizans, old swords, &c. In the centre of the upper room are an altar-screen, models of fortified places, Indian arms, and a variety of other military and naval curiosities.

The Roydard is at the east end of the town, in which one of the largest size is made.

Besides the places already described there are the Royal Marine Barracks, the Barracks of the Royal Sappers and Miners, and the Royal Ordnance Hospital.

(\textit{Penny Magazine}, Nos. 92, 442, 445, 447; \textit{Population Returns in good repair}.)

\textbf{WOOTTON-BASSET. [Wiltshire.]}

\textbf{WORCESTER}, a city and capital of the English county of the same name, is situated on the river Severn, upwards of 100 miles in a direct line west-north-west of London, 112 miles by the road. The boundary of the city was originally determined by a wall which commenced near Edgar's Tower, at the Castle gate, passed at the back of St. Peter's to a gate which was called Sid- bury Gate, and thence to Friars' Gate, which stood near the south-east corner of the town, and descending the northeast present corn-market, round the hop-market, to a bridge built in 1313, and fortified with a strong tower, which stood near it. It then followed the course of the river to the Priory gate, and thence to the Castle gate, and so to the west end of the city. There were four gates (besides the tower on the bridge) the last was taken down in 1797. The present limits of the city of Worcester extend from north to south about three miles, and nearly two miles from east to west.

\textbf{In the early part of the} 17th century, the city was the residence of the bishop of Worcester, and included the parishes of St. John, St. Michael, and the extra-parochial district of the College precincts, St. Peter's (in part), and the tithe of Whittington attached to the parish of Claines. The first nine parishes composed the city previous to the Boundary Act, and were united for the maintenance of the poor by an act of 1833.

\textbf{Boundary Act:} nearly the whole are built over, and there is no great extent of rural district within the increased limits.

Worcester is built almost entirely of red brick, with the exception of some public buildings, the churches, and the walls of the city, which are about of limestone. The wind is light and cheerful; their appearance is clean and neat; the houses various and well provided; and, like the dwelling-houses in London, the houses are, in general, of one story and half. The chief thoroughfares are Broad Street, Broad Street, Sidbury, College Street, the Cross, Foregate Street, and the Tithing. Besides the cathedral, there are twelve churches—St. Nicholas, St. Martin's, St. Swithin's, All Saints, St. Andrew's, St. Alban's, St. Michael's, St. Helen's, St. Peter's, St. Clement's, and St. John's. St. John's is the parish church of what may properly be termed a suburb of Worcester, and is on the opposite bank of the Severn to the main portion of the city. There is a Roman Catholic chapel, and places of worship for Jews, and for Unitarians and Dissenters. In 1847, the Jews were numerically in excess of the Protestants; the Dissenters were next in number, and the Catholics last. The population of the city, in 1841, was 42,564, and in 1851, 42,729, of whom the males were 21,325, and the females 21,404.

\textbf{A cathedral existed here in the time of the Saxons; but it was destroyed by fire, and was superseded by a new cathedral, built by Oswald, the bishop, in 1006. This church, dedicated to St. Peter, stood on a fresh site, and was consecrated in 1094. This cathedral likewise twice suffered from fire. After the second conflagration, for sixteen years it remained in a dilapidated state. Repairs, so great as to necessitate a new building, were undertaken in 1244, and in January, 1248, the church was re-opened in the presence of the king. Various alterations and additions were made in 1224, and again in 1380.}

Worcester cathedral is built in the form of a double cross, with double transepts. The tower, which is 193 feet high, rises from the intersection of the western transept with the nave and choir. The nave, which appears to be the oldest part of the present building, is divided from the aisles by ten clustered columns on each side, surmounted by pointed arches. The roof is groined, and ornamented with flowers, heads, and other forms of decoration. The height of the nave is 67 feet, the length 174 feet, and the width 30 feet. The choir has also a handsome groined roof; the altar is of stone, both richly sculptured. The tomb of King John is in the centre of the choir. There is a Lady-Chapel, which corresponds in date and style with the choir. The total length of the cathedral is 422 feet; the greatest width is 149 feet. The present tower, 72 feet from the ground to the top, is 120 feet. The exterior is plain, but a fine effect is produced by the apparent lightness of the architecture, and by the pinnacles, which rise not only from the tower, but from almost every termination of the building. The clusters form a quadrangle on the south side; the east end is the chapter-house, which contains the cathedral library. The cathedral is in an indifferent state as to repair, and costs a considerable sum yearly for that purpose. Many of the restorations which have been made in former times in various parts of the interior, are in the most incongruous and unsuitable styles.

The corporation of Worcester consists of a dean and ten prebendaries or canons. There are also seven domestic canons and a minor canons. There are ten chaplains, and two or three other officers. The total yearly income, on an average of three years ending in 1831, was 21,088l.; the annual expenditure, by the same average, was 3009l.

The other principal buildings are, the county courts, later erected, a great room, the present city hall, the High Tower, and the guildhall. In the guildhall is a large room, which is used for public entertainments. The present bridge over the Severn was built in 1780.

The living in the city of Worcester, estimated on an average of three years ending 1831, were—St. Albans's, rectory, in the gift of the bishop of Worcester, with a net yearly income of 744l.; All Saints, rectory, in the gift of the crown, with a net yearly income of 183l.; St. Andrew's, rectory, in the gift of the dean and chapter of Worcester, with a net yearly income of 165l.; St. Clement's, rectory, in the gift of the dean and chapter of Worcester, with a net yearly income of 101l.; St. Helen's, rectory, in the gift of the bishop of Worcester, with a net yearly income of 136l.; St. Martin's, rectory, in the gift of the dean and chapter of Worcester, with a net yearly income of 376l.; St. Nicholas, rectory, in the gift of the bishop of Worcester, with a net yearly income of 206l.; St. Swithin's, rectory, in the gift of the dean and chapter of Worcester, with a net yearly income of 233l.; and St. Swithin's, rectory, in the gift of the dean and chapter of Worcester, with a net yearly income of 170l.

According to the Education Returns (1833), Worcester contained eight infant-schools, with 501 children; thirty-nine daily schools, with 1130 males and females; six national schools, with 657 males and females; one daily free grammar-school, founded by Queen Elizabeth, with 23 males; nine-day and boarding-schools, with 230 males and females; one boarding-school, with 59 males; and twelve Sunday-schools, with 1687 males and females.

A manufacture of cloth was once carried on here to a considerable extent, but was in the course of time abandoned. The principal trade is now that of the clothing of sheep, and the number of the people inhabitants; but this manufacture also declined, and is gradually diminishing. China is made here: there are three different factories of some celebrity. The principal inns are the Star and Garter, the Unicorn, and the Crown.

Worcester, previous to the Municipal Reform Act, in 1835, was a corporation consisting of a mayor and six aldermen, 24 capital councillors (of whom the aldermen were part); 48 capital citizens, and an indefinite number of minor citizens; the last-mentioned were entitled to vote for the two members elected for Worcestershire to the House of Commons. The titles to admission to the freedom were birth, apprenticeship, and gift by the council. The number of freemen, in 1835, was 2900, and the population of the borough was 18,500; the population of the actual town and suburbs at
the same time (1835) was 27,000. The governing charter was 19 James I. The borough is now divided into five wards, with 12 aldermen and 36 councillors. The number of burgesses on the roll at the first registration, in 1833, was 1022; the number on the roll in 1857 was 1406, besides whom there were 944 freemen who were parliamentary electors, though not burgesses.

Worcester, previous to the Reform Act, returned two members to Parliament. The right of voting was in the citizens; the largest number of electors who had polled at any election during thirty years preceding 1831, was 2179 in 1807. Under the Reform Act, Worcestershire still returns two members to Parliament. The number of electors on the register in 1835-6 was 2579; in 1839-40 the number was 2561, of whom 1034 were 10l. householders, 947 were freemen, and 580 were entitled to vote for more than one qualification.

The limits of the city of Worcester and the parliamentary borough are co-extensive. The population of the city, as given in the Population Returns for 1841, was 26,306, of which 11,614 were males and 14,692 females. The population, as returned for the parliamentary borough, was 26,306, which is said to be a more correct return of the actual population than the above, as given for the city.

History.—Lambard, an antiquary contemporary with Camden, remarks, in his 'Alphabetical Description of England,' that he never met with a place that had so great experience in the calamities of the intestine broils of the kingdom and other casual disasters as the city of Worces-
ter. The city was destroyed by the Danes and rebuilt about 894 A.D. by Ethelred. In 1041 the town was plundered and partly burnt by the troops of Hardicanute, which were sent to force the reluctant inhabitants to pay a tax which the king had imposed. In 1074 a body of troops under the conduct of the Duke of Normandy assembled here to quell a conspiracy against William the Conqueror, and to guard the passes of the Severn against the rebels. In 1088 Berwald Neumark unsuccessfuiuly besieged the city. In 1113 the town was beleaguered, and the cathedral, was consumed by fire. In 1133 a great part of the city was again burnt by a casual fire, and the cathedral damaged. In 1159 the forces of the Empress Maud attacked the city, forced an entrance on the north side, and fired and plundered it. In 1149 King Stephen burnt the city, but the castle, which had been strongly fortified, resisted his attempts. The remains of one of the forts then razed may be seen on Red Hill near Digley: another stood on Hawley Hill, from which the castle was commanded. Eustace, his son, vigorously besieged the castle, but was as vigorously repulsed; in revenge he fired the town. In 1157 Worcester was fortified against Henry II. by Hugh Mortimer, but afterwards submitted. In 1216 again.selected to its garrison, and in 1216 the king's troops, with the earl of Chester, plundered the city, which had revolted. King John was buried here in this year. In 1225 a great tournament was held here. Bishop Blosiex communicated all persons concerned in it.

In 1263 Robert Ferrars, earl of Derby, Peter de Montfort, earl of Leicester, and other barons of their confederacy, besieged and took Worcester. The church was spared, but the houses rifled. In 1264 King Henry III. was in the city. In 1266 Sir Simon de Worcester by a seal, whose hands he had fallen at the battle of Lewes. In 1342 and 1349 the inhabitants were afflicted with the plague. In 1401 Worcester was burnt and plundered by Owen Glendower with their Prince. Henry IV. drove back into Wales. In 1494 there was an unusual and destructive flood of the Severn. In 1495 executions took place here, and 500 marks were paid as a ransom for the city, which was seized by Henry VII. In 1534 the city was given to Sir William Paget, and in the following year it was scourged by the sweating sickness; in 1537 there was again a pestilence. In 1542 Worcester was besieged by the parliamentary forces. Lord Coventry and Sir William Russell commanded the garrison, and were reinforced by a strong body of horse under Prince Rupert and Prince Maurice. Colonel Fiennes commanded the attack, overcame an obstinate resistance, and took possession of the town. The royalists retreated towards Herefordshire. Various es-
cesses were committed by the insurgents; the cit-
ty was plundered, and the inhabitants were required to raise a loan of 3000l. for the use of the parliament. Defeat neither changed the opinions nor weakened the re-
solution of the citizens. In 1643 they again raised money for the king's cause, the walls were repaired, fresh men were mounted, and other evidence given of renewed res-
istance to the parliament. Another siege was sustained in 1646, which, after many sallies and many skirmishes, was concluded by a treaty. A third and most important battle was fought here by the same contending parties in 1651. In the month of August Charles II. disposed the small adverse garrison, which were in possession of the town, and occupied it and a district to the west of the city. Seven-Sisters, the nearest town to the north, was taken by Cromwell, who encamped on Red Hill, about a mile north of the city. While the assault was conducted with vigour and ability, the defence on the part of the Royalist displayed neither courage nor judgment: it is asserted by contemporaries that Charles led his cavalry in person, but it would appear otherwise from Lord Clarendon's account. The result was a total defeat of the royalists and the rapid flight of the king, which was effected with great difficulty.

The site of the castle which from time to time has been so many sieges and so frequently changed governors is on the south side of the cathedral. There is no architectural remains whatever. A small part of an old ecclesiastical house, the nunnery of Whilamut, is called the Judges' Hall, and bears the marks of the late destruction. It was built from the remains of a house which takes its name from a house of Franciscans which formerly existed here, and the remains of whose building were demolished in 1823. The Dominicans, Penitents, Sack Friars, and Friars of the Holy Trinity had likewise their establishments here.

(Nash's Worcestershire; Green's Antiquities of Wor-
cester; Report on Municipal Corporations; Boundary Reports, &c.)

WORCESTER COLLEGE, Oxford. This college, originally Gloucester Hall, was founded in 1714, pursuant to the will of Sir Thomas Cooke, of Bentley Peascot in Worcestershire, Bart., for a provost, six fellows, and as scholars, the scholars to be elected from the school of Stonegrove, Fossebridge, Wooton, Bath, and a keeper, or in default of persons properly qualified to teach these schools, from any other endowed school in the county of Worcester. The schools have a priority of claim in the order in which they stand. A preference is to be given in all instances to the scholars of the Whitby Grammar School who are qualified to offer himself as a candidate who has not been at one of the aforesaid schools for at least two years previous to the election. Two of the fellows on this foundation may laymen, provided they do not reside in the county of Worcester. The number of the three senior fellows of the foundation are the election. The college has since received considerable endowments:

James Finney, D.D., prebendary of Durham, left by his will, in 1727, provision for two fellowships and two scholar-
ships for natives of Staffordshire.

George Clarke, D.C.L., Fellow of All Souls College, and one of the representatives in parliament for the Universities, left by his will, in 1734, estates for the endowment of three fellowships, and three scholars to be elected 'out of such persons as are born of English parents, in the provinces of Canterbury and York, and none other. A preference is given, ceteris paribus, to the sons of clergy and the children of the Church of England's auxiliary clergy.' who is always one of the fellows of this foundation may not go into orders, if the provost and four of the six senior fellows shall think fit to dispense with them. The provost and six senior fellows (who may be present in their places) with Thomas Cookes and Dr. George Caxton are the electors.

Sarah Eaton, daughter of Byron Eaton, D.D., formerly principal of Gloucester Hall, left by her will, in 1731, estates for the foundation of seven fellowships and five scholas-
tships. Candidates for scholarships on this foundation must produce certificates signed by the bishop of their respective dioceses, by the ministers of their parishes, and by two or more respectable inhabitants of the same, bat
they are sons of clergymen of the Church of England, and want assistance to support them in the University; the present subscriber is one of the founders of Sir Thomas Cookes and Mrs. Sarah Eaton are the electors.

The fellows of the college are, in all instances, elected out of the scholars of their respective foundations, and must all have taken the first degree, which is not those dispensed with by the statutes before mentioned.

There are likewise two exhibitions left by Lady Holford, in aid of exhibitions from the Charterhouse, and one by Mr. Kay for a native of Yorkshire.

The foundations are of the value of 200 a year, the proceeds of which follow the foundation of Sir Thomas Cookes and Mrs. Sarah Eaton.

Sir Thomas White's intermediate establishment acquired a considerable degree of reputation, though with some important exceptions that of his scholar's, who was no more known as a maker of scholars than as a maker of teachers.

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Among the eminent men connected with Sir Thomas White's foundation who received their education in Gloucester Hall, were Thomas Coryate the eccentric traveller, Sir Kenelm Digby, Thomas Allen the mathematician, and Evelyn the poet.

The river Stour has a more striking contrast than the old and new buildings of Worcester College as seen from the inner court.

The present chapel occupies the site of that which belonged to Gloucester College, erected in the fifteenth century, and which was made use of to the last, but was pulled down in Edward VI.'s time by Sir John Williams, Knight, afterwards Lord Williams of Thame. The modern edifice, extremely plain as a structure, forms part of the general design first suggested by Dr. Clarke for rebuilding the hall and library, in 1720. The re-construction of the college however proceeded slowly.

The range of new buildings on the north side of the inner court, containing the provost's lodgings, and the apartments of the fellows and scholars, were not completed till 1776. The present hall, forming the south side of the entrance-court, corresponding with the chapel opposite, was not finished till 1784. The south side of the inner court is still occupied by the old buildings which belonged to Gloucester College.


WORCESTERSHIRE, an inland county of England, is bounded on the north by Staffordshire and Shropshire, on the east by Warwickshire, on the south by Gloucestershire, and on the west by Herefordshire. There are several detached portions of this county: the most important contains the town of Dudley, and is surrounded by the county of Staffforshire. Another detached part, forming a small-earther direction from the main body of the county, contains the market-town of Shipston-on-Stour. There extends in this direction a narrow promontory of Worcestershire, containing the towns of Broadway and Ebley. The greatest length of the county is about 20 miles, in a direction from north-east to south-west; its greatest breadth is about 22 miles, in a line running east to west. Worecestershire, the county town, is distant from London by the nearest turnpike-road 112 miles. The principal towns are Tewkesbury and Leamington. The area of Worcestershire is 718 square miles, or 459,710 acres. The gross population in 1831, amounted to 211,365, being an average of about 272 persons to a square mile. On comparing this amount with the average in the rest of the country, we find, with two exceptions, the population of Worcestershire to be the most dense. The population of Gloucestershire, according to the returns of that year, was about 307 to a square mile; of Herefordshire, 122; of Shropshire, 163; of Staffordshire, 121; and of Worcestershire, 233,336. In respect of size it is the thirty-fifth of the English counties. In amount of population (1841) it is the twenty-fifth.

Surface.—Worcestershire is generally a flat country, on either side of which are two nearly parallel ranges of hills, which partly bound and partly intersect it: the intermediate space is for the most part a fertile plain.

The eastern range of hills commences in the north in the Clent Hills (a portion of which are in Worcestershire and a portion in Staffordshire), and the western range commences in the neighbourhood of Bewdley, and runs southward through Abberley and Malvern to the great chain of Malvern Hills, in which it terminates. The principal hills not comprised in or bordering on these chains are Breton Hill, situated about three miles south of Pershore, Broadway Hill, near the town of that name, in the south-eastern extremity of the county, and the wide range of hills extending from Croome northwards towards Worcester.

The Severn.—The principal rivers are the Severn, the Avon, the Teme, and the Salwarpe.

The Severn, having in two places formed the boundary of Worcestershire with Shropshire, enters the latter county at Bewdley: the bearing of its course is for the most part southerly: passing the towns of Stourport, Worcester, and Upton, it becomes near Ripple the boundary of Gloucestershire and Worcestershire, which county it finally quits at Chaslely Rye. It is navigable for vessels of eighty tons as far as Worcester, and for barges of fifty to sixty tons above that city. Some attempts have been made to improve the navigation, but no result has yet been accomplished. This river is valuable for its salmon, and abounds with eels, lampreys, and lamprey.
dary of Worcestershire with Herefordshire. It falls into the Severn near Powick, about three miles south of Worcester; it is not navigable. The stream is good for fishing, and trout and greyling are abundant.

The Stour, a smaller river than those above mentioned, rises to the north of Bromsgrove, flows through Droitwich, and falls into the Severn near Claines.

Roads.—The principal roads are from Birmingham through Bromsgrove, Droitwich, Worcester, Severn Stoke, and Stourbridge to Kidderminster, and Gloucester; this line was formerly the main communication between Birmingham and Bristol, but the traffic upon it has very greatly diminished since the construction of a parallel line of railway from Birmingham to Gloucester. Another important road from Dudley, Stourbridge, Kidderminster, to Stourport; or, leaving Stourport on the left, through Haltcliff and Upperosley to Worcester. From Worcester to Malvern there is considerable traffic on a road communicating with Ledbury and Hereford. There are likewise good turnpike roads which connect the county-town with Tenbury and Bromyard: mail-coaches which formerly travelled along them to Ludlow and Leominster were discontinued in 1842. At the same time a mail from London through Oxford, Broadway, Bengworth (a suburb of Evesham), Pershore to Worcester, was taken off the road and the letters forwarded by railway. Worcester is distant from Birmingham by road 26 miles, from Cheltenham 26, from Oxford 88, from London 112, from Bromsgrove 13, from Stourport 10, from Bromford, Ledbury, and Tewkesbury 11 miles.

Railways.—The chief railway in this county intersects it diagonally from north-east to south-west, and communicates on the one side with Birmingham, on the other with Tewkesbury, Cheltenham, Gloucester, and Bristol. The main line parallels the turnpike-road leading from Tewkesbury to Worcester and Birmingham, on the south-east. The part of the line nearest to Worcester is about three miles distant, at Spetchley, where there is a station.

A portion of the London and Birmingham Railway likewise traverses the parish of Yardley, the north-eastern extremity of the county. There are tram-roads, on which horses are worked, in the coal-districts, but none of them are long or of great importance; only a small portion of the electoral个人观点 is from Stratford-upon-Avon to Moreton pannes through Worcestershire.

Canals.—The northern part of the county is intersected by several canals, which are of great commercial importance. The chief canal reaches from Birmingham to Worcester, and passes through the district of Droitwich, and having two branches, one to Dudley by way of Halesowen, and the other from King's Norton to Stratford-upon-Avon. From Dudley there is a canal to Stourbridge, Kidderminster, and Stourport, at which last place it joins the Severn; it was formerly a railway, and this canal to Leominster and Kidderminster in Herefordshire, but only a portion of the work, from Woorfordon to Tenbury, and thence to the neighbourhood of Mamble, has been executed: funds are wanting for the undertaking, and it is not likely that it will ever be started.

Geology.—The geology of Worcestershire has been fully detailed by Mr. Murchison, in his valuable work on the 'Silurian System.' The county is composed for the most part of new red-sandstone, lias, and oolite; other formations are visible in the shales of the Malvern Hills, in the districts bordering on Tenbury, Bewdley, and Dudley, and in the Lickory and neighbouring hills in the northern part of the county. The new red-sandstone comprehends the formation which is watered by the Severn, together with the north-eastern portion of the county: its lower bed being found round Witton, Stourport, Kidderminster, Bromsgrove, and Alvechurch; and the higher, called the Kepper beds, round Droitwich, Worcester, and Upton. The lias formation is thin almost throughout the county, and Evesham, in the vale, is covered by the Avon; it extends from Foster Green to the limits of the county near Tewkesbury. The portion of the Malvern Hills within the boundary of Worcestershire consists of trap; while the Silurian rocks, the Cambod sandstone, Ludlow rock, and Wenlock limestone appear in the northern portion of the chain. The lower coal and ironstone beds are found at its termination, to the north of Abberley Hill, in the Forest of Wyre. Here also is found the old red-sandstone formation upon which Tenbury stands, and which is the prevailing stratum throughout the adjoining county of Hereford. Bewdley is situated near the junction of the lower red-sandstone with the coalfield of the Forest of Wyre. The town of Dudley stands on the thicker coal-measures, Wenlock limestone appearing on its north-west, and the coal in the south-east. In the Lick ley there are several altered sandstone beds, the lower coal-beds, and trap; the latter rock forming the range connecting with the Clent Hills of Staffordshire. In the neighbourhood of Droitwich and Stickle, or, are saliferous beds, and a large quantity of salt is manufactured. A full and interesting account of them is given in a pamphlet by Dr. Hastings. They are likewise described by Mr. Murchison in his 'Silurian System' (p. 31), to which work we refer our readers for further particulars of the coal-field, and remarkable geological phenomena of the county.

In a paper by Mr. Leonard Hornor, in the 'Geological Transactions,' there is a full and interesting account of the geology of the Malvern Hills.

Agriculture.—The climate of Worcestershire, specially in the middle, south, and west of the county, is remarkably mild and healthy; and the fruits of the earth are brought to early maturity. The vales of Severn and Avon are but little raised above the level of the sea; and it has been observed, that an elevation of sixty yards makes a difference in climate equal to a degree of latitude towards the north, soil and other circumstances remaining the same. The higher parts of the county, between Bromford and Tewkesbury, are high enough to form a break in the line of the rain, and the higher hills, such as the Malvern Hills, are proportionally colder and later. They tend to shelter the sun between them from the cold winds, and add to the mildness of the climate there.

The Teme winds through the county for about 30 miles. Along its banks are many hop-gardens and orchards; proof of a good deep soil, and the lower parts form pastures and meadows. Several lesser streams run in their own valleys, their soil being generally poor, except in a few instances in which bogs have been formed by the stagnation of the waters, with their accompanying peat. Except where the higher hills rise in praiseworthy surface is in general gently undulating. One-half of the county is park and meadow land. The soil which are met with near Kidderminster are some of the most productive, and others very poor, as about Mitten and at Worlester. The mixed springy gravels and gravelly loams to the north of Bromsgrove are less fertile than the higher and more level country. Upon the whole, few counties in England contain so much good land as a consequence, fewer wastes. Viewed from the hills, the valleys give the idea of very successful cultivation. The soil of this county may be arranged, without pretensions to great accuracy, as follows:—

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light land, sand, sandy loam, gravel, and gravelly loam</td>
<td>120,000</td>
</tr>
<tr>
<td>Mixed stiable loams adapted to general culture, fit for turnips, hops, fruit, &amp;c.</td>
<td>120,000</td>
</tr>
<tr>
<td>Strong clay loams, which, where they are dry, are adapted to hops, fruit, wheat, and beans, but too strong for turnips</td>
<td>120,000</td>
</tr>
<tr>
<td>Natural meadows along the caravan of the rivers</td>
<td>50,000</td>
</tr>
<tr>
<td>Upland pastures, parks, and plantations</td>
<td>50,000</td>
</tr>
<tr>
<td>Woodlands, roads, villages, towns, and water</td>
<td>20,000</td>
</tr>
<tr>
<td>Wastes and commons</td>
<td>20,000</td>
</tr>
</tbody>
</table>

500,000

The farm-houses in Worcestershire are generally substantially built, but they are often inconveniently situated with respect to the land, owing to their old and common fields, and the annual are neither in fine or of the end. Some modern erections are an exception; but, in general, the offices and buildings for the convenience of the farmer are not of the best construction. The farms are most of them small, which indicates ancient cultivation; but they are gradually enlarging.
uniting several of them under one tenant. Leases are not generally granted by the proprietors, or demanded by the tenants, except where improvements are intended, in which case they are usually for 21 years. Those who grant new leases, when it has been thought fit, or out of a desire to have only tenants at will, are apt to load them with conditions, which at best are useless, and only impede improvements. All that is required is some security against over-cropping at the end of the lease, and against wilful damage done to the land. This end may be secured by requiring the lessee to engage to pay damages on deterioration of the land; preventing the sale of hay and straw, except on condition of purchasing a proportional quantity of dung, bones, lime, &c., to be laid on the land, and all the dung done in the last 2 years; and also by giving the same security for the succeeding tenant, which will secure a proper quantity. The commutation of the tithe for a rent-charge greatly tends to encourage improvements, the whole profit of which is secured to the improver without participation. It is a very great relief to the farmers of the district.

The ploughs in common use in Worcestershire have two wheels attached to the beam, as in the Rutland plough. They are usually drawn by three horses, and easily managed in soils which are not stony. In the vale of Evesham, where the land is more level, there are ploughs with only one wheel, but the old heavy swing ploughs are much the best. The ploughs are generally of such a way gradually to lighter ploughs with one or two wheels. In the light sands a double plough making two furrows at once has been in use, but if it is drawn by four horses it is better to use single furrows, as it is only useful where one man can plough with two or at most three horses abreast, which is guided by reins. Thus a man and at least one horse is saved, and good work is done.

The other agricultural implements in use were formerly only carts, wagons, rollers, and harrows. All the new implements have been only lately recommended; and their general introduction goes on slowly, many disappointments having arisen, owing to a want of sufficient skill in the farmers; and it is only in the last year or two that large orders have been given for the most approved substitute.

The practice of following during two successive winters and sowing barley in the second spring, has been adopted by some farmers with great success, sheep having been folded on the land the last winter. The practice of following during two successive winters and sowing barley in the second spring, has been adopted by some farmers with great success, sheep having been folded on the land the last winter. The land is made very rich and manured by the straw; the hay saved is of the best quality; and the grass-seeds come up well after the following. Ons are not so general a crop, and no more are usually sown than will supply the wants of the farmer's horses. Beans are set or dibbled in by women, who use a long dibble. They are hoed three times, and, in general, the return is abundant, frequently 40 to 45 bushels per acre from 3 bushels set. The produce of beans is greater than the wants of the county require.

Vetches are a valuable crop in lands which are too heavy for turnips, either because they cannot be well tilled or to soil horses with in the stables. If they are sown at regular periods, so as to keep a constant succession of them from May to November, which may easily be done by sowing winter oats one or two months before the wheat season, and spring oats in April, all needful quantities as the stock may require. Thus not only is there a great saving in fodder—for the horses require no oats if they have good vetches with the pods and half-form ed seeds—but the cheap manure is made for the land. Vetches may be looked upon for heavy soils as turnips are for the lighter. They require less tillage and hoeing, and clean the land by smothering the weeds. The land should always be well manured for them to secure a heavy crop. It is not advisable to wait for a second growth of vetches; as soon as they are cut or fed off, the land should be ploughed; and if no intermediate crop is sown, it can be worked as a fallow for the next crop, which may be wheat, beans, or barley, according to circumstances.

Potatoes are raised in great abundance in this county, and supply the markets of Birmingham and Staffordshire. There are many varieties of early and late potatoes which have provincial names, but which it would be difficult to ascertain the productive merit of, as their names are not generally known. The potatoes used formerly to be sown broadcast, and some farmers still adhere to the practice; but all the best farmers, especially where the farms are large, adopt the system of sowing in drills.

The Kidderley sands have long been famous for the growth of carrots and for raising carrot-seed. The ground is trench-ploughed. The seed is mixed with sand to prevent its adhering by its edges, which have small hooked fibres all round. A drill is opened by a machine, and the seed is deposited by hand. A machine that will drill carrot
seed is still a desideratum. The time of sowing is in March. Great attention is paid to hoeing and weeding as soon as the plants appear; for the weeds are very apt to get the start of them. This makes the cultivation expensive, but the return is very great, without much exhausting the soil. They sell readily for two shillings per cwt. on the spot, and a crop of fifteen to twenty tons per acre is not uncommon, that is, from 30l. to 40l. per acre. A part is used for culinary purposes in the towns, and a part given away to the poor, who are very grateful to them, and they do well upon them. The orange-carrot of the large varieties is that usually sown. The Belgian white carrot is more productive, but not so saleable in towns. Flax is not cultivated as it should be in the richer soils: this is owing to the small landlords or farmers, who probably think the cultivation as exhausting the land: under proper regulations it might be a source of great profit both to the landlord and the tenant; and it may be laid down as a general rule, that what is profitable to the tenant will in the end be advantageous to the landlord, and that both may be consulted without many prohibitions or restrictions.

Profits occupy some extent, and are attended with great results, as well as, occasionally, with very great profits. Much may be made of them, but, as with all other crops, have been very advantageous to the hop-farmer. The cultivation of this plant is a perfect garden culture, chiefly by the spade. Much manure is required if used the land is not naturally very rich. Deep meadows and trenched up pastures and new and abuminous crops. Consists of rotten dung mixed with sods, and sometimes with woollen rags, are used by the best hop-growers. [Hops.] The average expense of the cultivation, exclusive of the diminution of the size of the tenant, in the county was about £600 acres in 1807. In a soil so well suited for orchards as in found in certain parts of Worcestershire, it is surprising that the cultivation of fruit-trees is so far behind other improvements. The county is very well planted with fruit-trees which are not vigorous, but show great symptoms of age and decay; some fresh plantations have been made, but even in these no great attention has been paid to have fruit of the best quality, especially apples for cider. The trees stand so nearly one another, and they are seldom sufficiently protected from injury by cattle turned out to feed on the herbage. Formerly fruit-trees were planted in hedgerows, which only enticed depredations, and did more harm by their shade on the land than they did good: now they have been made into small trees. The deep loams on a subsoil of soft sandstone are the most suitable for orchards. These are found in the western part of the county. The best loam inclines to a marl. The stooks are obtained from the eaves, where they are shaved off, and the scions inserted into the naturally-called grass-grafting or saddle-grafting. They begin to bear in about five years. In this case, the greatest attention is not always paid to the age of the tree from which the graft is taken; and thus many disappointments arise, as the young trees showing all the symptoms of the diseases of age. It is not recollected that the life of the graft is probably only a continuation of the life of the parent tree; and if this is old and exhausted, the graft will soon show the same defects and diseases. Most of the best old sorts, such as the golden pigeon and several others, stand too nearly together, and the early extant, and grafting can retart it. The only means of obtaining fine sorts is to sow the seeds, and let the wild tree show fruit: in many hundreds of wild apples one may be found that is good; and this may be perpetuated by grafting for a couple of centuries. Many of the sorts of horse and judicious care will greatly increase the produce. The common method of making cider is by crushing the apples by means of a heavy stone rolling in a stone trough, and moved round by manual labour or by a horse. Pear-orchards are common in Worcestershire.

There is much fine timber growing in the hedgerows, whether advantageously to the proprietor or farmer may be matter of doubt: elms predominate, and grow to a large size where they have room. There are also some woods and plantations of oaks and ash, the underwood of which forms valuable coppices. In many of the parks and pleasure-gounds which surround the seats of the nobility and gentry are many splendid trees preserved for ornament, and the whole country, when viewed from an eminence, gives the idea of a thickly timbered country, and of great richness.

Draining has been practised for a long period on many of the principal estates, chiefly on Ellington's system, which is excellent for carrying off deep-seated springs, but not for those who are very distant from them, and it is not well understood. Many of the low grounds on retentive subsoils would be much benefited by this operation, and nowhere would it repel the outlay better. Paring and turning the surface of boggy land, where the grass is coarse and weak, and shallow, and the persons, who probably are not restricted by their landlords. The first crop potatoes, which always do well in the ashes; the next wheat or oats; and the land should then be laid down again with the best grass-seeds; a previous dressing with lime is much improve the subsequent pasture.

There are not so many irrigated meadows as you would expect along the banks of so many rivers and water streams: this is owing in part to the rights of certain landholders erected on every stream, which prevent the free use of the water at all times, as in other counties: when the water is dis-oblisbed, the water has been brought from a considerable distance by canals, which supply several farms on the estate. The water is let on and off under strict regulations, and the damage on the grass is unknown. There is no doubt that many more water-meadows might be formed, without interfering with the mills; and many of the latter are small and insignificant, and do more harm by obstructing the course of the water, than they do profit to the owners, who are generally also proprietors of the land around.

There is no peculiar breed of cattle in Worcestershire. They are chiefly obtained from Herefordshire and South Wales. The Holderness breed has been introduced, as it is very well adapted to the county; they are all mostly crossed without much judgment. The best and most profitable breeds to stock in rich pastures are the Herefords and Devons, which get an excellent condition by a summer's run, and are then fed in the stalls with hay, turnips, and oil-cake in the winter; very fat beasts are sent up to Smithfield and to Birmingham every year from this county.

The sheep are mostly of the Leicester breed, with the suit the rich pastures. On the Malvern Hills are seen many small sheep, which have been mutton. The Cotswold, and a cross between them and the Ryeland sheep, are approved of by some: they have good carenesses, and bear large fleeces.

The swine are fat for farthing. There are no pigs of the most of the strong black breed. Oxen are seldom used on a farm. A little cross pure blood would greatly improve the pace and courage of farm horses. They would be lighter and more active, and thus do more work.

As is generally the case in the rich loamy soil, so as are found in the vale of Evesham, the roads were formerly very badly maintained. In 1792 a club of gentlemen and farmers was established for the especial purposes of attending to the roads, and regular scales and regulation were drawn up. Some of the members being appointed overseers of the roads, and availing themselves of the power of the highway act, without any oppressive demand or statute, duty, or additional highway rates, but simply by purchasing the materials, and placing men on the roads so that, that, from being nearly impassable, they soon became excellent; and the most determined grumblers and opponents of all improvement were forced to admit the great advantage of good communications, and the cost of them.

The following fairs are held in Worcestershire—Ashchurch, April 22, August 10; Bellbroughton, first Monday in April, Monday before St. Luke's; Bewdley, April 12, December 10, for hogs, December 11, cattle, &c.; Bromsgrove, June 24, October 1; Droitwich, Good Friday, October 23, December 21; Dudley, May 8, August 5, October 5; Evesham, February 2, Monday after Easter; Kidderminster, Holy Thursday, and three weeks.
after September 4; King's Norton, April 23, September 3;
Pershore, Faster Tuesday, June 28, Tuesday before All Saints, November 1; Kidderminster, Droitwich, Kidderminster, Kidderminster, Worcestershire, October
Shipston, June 22, Tuesday after October 10; Stourbridge,
(houses) March 29, September 8; Stourport, weekly, on
Wednesdays, from September to Christmas, for hops; Tenny
April, 23d, July 19, September 26; Upton, Midweek
Public-houses, in the town, and before
St. Matthew: Worcester, Saturday before Palm Sunday,
Saturday in Easter week, August 15, September 19.

The regular weekly markets are:—Bewdley, Saturday;
Bromsgrove, Tuesday; Droitwich, Friday; Dudley, Saturday
Salwarpe, Worcestershire, and Perswall, which include about 170 parishes.

Worcester, Bewdley, Bromsgrove, Dudley, Eyesham, and
Kidderminster, are described in separate articles.

The principal towns are the following:—

Droitwich, a parliamentary and municipal borough, is
situated on the small river Salwarpe, 116 miles north-west
from London, 66 miles north-east from Worcester. The
town is seated in a narrow valley, through which the river
flows, in an angle, to pass between the parishes of
Nicholas, and St. Peter, and parishes of Dodderhill, Marl-
borough, and Salwarpe. The total population of the
borough in 1841 was 5832, of whom 1346 were males, and
4856 were females. The number of houses was 1331
including the above three parishes; in the town the
population is upwards of 3000, a part of the town being
beyond the limits of the borough, the population of which
part in 1831 was 225. The population of the borough in
1851 was 2987. The Exchequer-House, where the duties
on salt are paid, is a fine ancient structure, with stained
Panoramic windows. There are two prisons. The living of St.
Andrew, with St. Mary Wilton, is a rectory, in the gift of the
crown, the average net annual income of which is £230.
The living of St. Peter is a vicarage, in the gift of Earl Stourton-Coleman.

Previous to the Municipal Corporations Act in 1835 the
borough of Droitwich consisted of two bailiffs and an
indefinite number of burgesses, the number of whom in
1835 was 50. The governing charter was 22 James 1. The
corporation contains a mayor, 12 aldermen, and 12 council-
noirs. The number of burgesses or municipal electors in
1837 was 228.

Previous to the Reform Act Droitwich returned two
members to parliament. The greatest number of electors
who had voted at an election previous to 1831 was 179.
It now returns one member to parliament. The number of
electors on the register in 1839 was 236, in 1839-40 the
number was 337, of whom 346 were adults, 3827.

The town, which is now extended con-
considerably beyond the limits of the municipal borough,
contained in 1841 a population of 6388.

The chief trade of Droitwich arises from its salt-springs,
from which salt has been made from time immemorial, but
the quantity has been much increased since about 1723,
by sinking the pits to a greater depth, where the brine
was found to be much saltier, and from which it rose as before
to the surface. The quantity of salt now made is not less
than 30,000 tons a year. The Worcester and Birmingham
Canals, which pass by Droitwich, and communicate with the
Severn.

The Romans made Droitwich one of their stations called
Saline. It is mentioned in Domessay-Book on account of the
tax derived from its salt-springs. The charter of 22 James 1,
which is given in existence; but a copy of a charter of King
John is given in Nash's 'History of Worcestershire,' vol. i.,
308.

Great Malvern, eight miles south-west from Worcester,
is a market-town, but contained in 1841 a population
of 2798, including 150 visitors. It is much resorted to by
neighbours, not only for its medicinal springs, St. Ann's Well
and Holy Well, but for the beauty and salubrity of the
situation. The wells are between Great Malvern and
Little Malvern, which latter is a small village about three
miles to the south. The Malvern Hills, which are in the
immediate neighbourhood, vary from one to two miles in
width, and rise in most parts with a very gentle ascent;
yet afford extensive and beautiful views into Wales and
the adjoining English counties. The situation is very
picturesque, and has six bells with chimes. The architecture of the
whole structure is very rich and light. When the monas-
tery was dissolved by Henry VIII, the inhabitants bought
the church and made it parochial. Of the rest of the mo-
astery nothing is extant, except a gateway, which is in
a good state of preservation. The monastery was originally
endowed by Edward the Confessor.

Pershore is a market-town, nine miles south-east from
Worcester, on the west bank of the Avon, which is here
navigable for boats. The town is well built and well-
paved. The inhabitants are chiefly employed in the
manufacture of stockings. The town consists of the parishes
of St. Andrew and Holy Cross, exclusive of their tow-
ships; the population in 1831 was 2536; in 1841 it was
3048. St. Andrew's is a small church with a square tower
containing six bells. The church of Holy Cross has a
lively square tower with eight bells, and there are some
ancient monuments in the interior. The living of St.
Andrew's is a vicarage, which consists of the curacies of
Holy Cross, Bford, Dofford, Brickfield, and Pinvin, in the gift of the dean and chapter of Westminster, and
of the average net yearly value of £700. There are
ruins of a Benedictine abbey.

Kidderminster-on-Stour, a market-town situated on the river
Stour, in an outlying portion of the county, in Warwick-
shire, about 27 miles east-south-east from Worcester, di-
rect distance. It was formerly a very large sheep-market,
and Sheepston has become Shipston. The town has no
large trade apart from the manufacture of stocking. The living is a rectory united
with the rectory of Tidmington, in the gift of the dean
and chapter of Worcester and Jesus College, Oxford, alter-
nately, of the average net yearly value £1000. The church is
dedicated to St. Edmund. The Baptists, Methodists,
and Quakers have chapels. The population of the town
was 2932; in 1841 it was 3464, including 102 persons in
the Shipston-on-Stour Union workhouse.

Stourport is a market-town, which derives its name
from its bridge over the Stour. The bridge is of stone, and
forms the boundary between Worcestershire and Staff-
shire, of which counties the river is here the
boundary. The town is rather irregularly built on a gentle
devotee, but the general appearance is handsome. The
five-roomed house is a picturesque old house, and there
is a small theatre. The church was built by subscription
in 1742. The living is a curacy in the parish of Old Swin-
ford, in the gift of the inhabitants, of the average
net yearly value of £140. There are places of worship belonging to the Independents, Baptists, Presbyterians, Quakers, and Roman Catholics.

There is a grammar-school, founded by Edward VI.,
and said to be richly endowed, but no return of the
number of scholars was given to the commissioners for inquir-
ing into the state of education in 1833; there were nine
other daily schools and two Sunday-schools. The popula-
tion in 1831 was 6148; in 1841 it was 7481, of whom
3654 were males, and 3827 were females. The manu-
factures consist chiefly of iron, glass, and fire-bricks. A
brickyard on the sand, 150 yards long by 300 feet wide, is
on the side of the glass, and is sold to a considerable amount for the same
purpose in other places. The bricks are made of the
Stourbridge clay, which has long been celebrated for its
excellence in resisting the action of fire. The production
is chiefly intended for the building trade. There is also a
most efficient navigable commerce by means of a branch from the Dudley
canal.

Stourport, 10 miles north of Worcester, is a handsome
and well-built market-town in the manor of Lower Mil-
ton, in the parish of Kidderminster and lower division of
Halfshire hundred. It has become a thriving place within
the last eighty years, before which period it was a small
and insignificant hamlet. Its prosperity is entirely owing
to local improvements by inland navigable canals. It is situated
near the confluence of the Stour and Severn; and the Staff-
ordshire and Worcester canals, which communicate with
Dudley, Stourbridge, and Kidderminster, enter the Severn
at Stourport. There is an extensive basin, opened in 1771, with wharfs and warehouses for the accommodation and as a general depot of the trade between the west and central portions of the kingdom. Stourport is a great mart for hops, corn, and apples. The market-day is Wednesday; and stone bridges and iron arches in the town are lined with carriages. The inhabitants of Stourport attend divine service at Milton; the living of which place is a perpetual curacy held with Kidderminster. The population of Milton chappel was 3012 in 1841. Stourport is a polling-place for the county.

Temesbury, formerly called Temebury, a parish and small market-town in the upper division of the hundred of Doddingtree, 17 miles north-west of Worcester. It is situated on the southern bank of the river Teme, which separates Worcestershire from Shropshire, and is here crossed by a stone bridge of six arches. The Kyre, a small but rapid stream, which falls into the Teme at the upper end of Tenbury, often occasions inundations in the town: this river is also crossed by a handsome bridge. The surrounding country is rich and fertile, and the grass-lands, yards, and orchards are very productive. Mineral-springs have been discovered in the neighbourhood. The Leominster Canal passes near the town, and supplies it with cheap coal from the Clee Hills: this canal was intended to have been carried to Leominster. The town of Stourport, but the original design has never been completed. There is a considerable trade in hops, cider, and perry; and the making of malt is carried on to some extent. The town consists chiefly of three streets, with an ancient corn-market, and a handsome bridge. The modern erection of the bridge was carried away by a flood in 1770, and the present edifice was erected in 1777. The living is a vicarage. The market-day is Tuesday, and there are fairs in April, May, June, July, and September, for horned cattle, horses, and sheep. The parish contains 4,510 acres, and in 1841 contained 1,849 inhabitants, namely, Tenbury parish, 1177; Berrington hamlet, 207; Sutton hamlet, 186; and the hamlet of Tenbury Foreign (252), with Kyrewood (27). Tenbury is a polling-place for the county.

Upton, a neatly built and thriving market-town, in the lower division of the hundred of Pershore, 8½ miles south of Worcester. It is situated on the bank of the Severn, in a flat and fertile plain. The river is here navigable for vessels of 100 tons burthen; and there is a basin for loading and unloading; and a considerable trade is carried on. A market-house, including under the same roof an assembly-room and a court-room for the use of the magistrates, has recently been erected. The course of six arches and the old church were injured during the civil wars, and in 1756 the latter was taken down and the present edifice erected. The living is a rectory, in the gift of the bishop of Worcester, valued at 1972 per annum. There are two day and Sunday national schools, one for boys and one for girls, the former supported by subscriptions and the latter by an endowment. The population of the parish was 2806 in 1841. Upton is one of the polling-places for the county.

Worcestershire is in the Province of Canterbury, and for the diocese of Worcester; 15 parishes and 8 chapels are in the diocese of Hereford. The diocese is divided into 10 deaneries.

The principal benefices are—

Net Value. | Poem.
---|---
Ripple | £1,116 | Bishop of Worcester.
Shipston-on-Stour | 700 | Dean and Chapter of Worcester.
Stoke Severn | 746 | Lord Coventry.

The yearly revenue of the bishop of Worcester, as an average of three years ending in 1820, was £695; for expenditure, by the same average, was £371, leaving at yearly income of 5890.

This county is in the Oxford circuit: a change in lately (1843) taken place in the order in which the town of Worcester is contended for by the assizes at Worcester, and that for the assizes at Oxford and before those of Staffordshire: the judges consequently go from Oxford to Worcester and thence to Gloucester. Worcestershire is the last town in the circuit, and the principal villages are Broadway, Bredon, Little Malvern, Blockley, Eckington, Redditch, Stourbridge, Alvechurch, Kidderminster, Monmouth, and Feckenham. Thirteen unions have been formed by the Poor Law Guardians for the accommodation of several of the parishes of Worcestershire, meet at Bromsgrove, Droitwich, Dibden, Evesham, Kidderminster, King's Norton, Malvern, Porchester, Shipston, Stourbridge, Tenbury, Upton, and Worcester.

The principal gentlemen's seats are—Cromes, belonging to Lord Coventry; Hagley Park, the residence of Lord Coventry; Witley, the property of Lord Ward, and belonging to the Earl of Shrewsbury (1843); the residence of the Queen Dowager; Hereford, belonging to the Hon. Robert Clive; Highfield, the residence of Lord King, the Earl of Oxford, belonging to Lord Osmersby; Windermere Park, belonging to Lord Sandys; Westwood Park, belonging to Lord Sandys; Kidderminster, belonging to Lord Sandys; Worcestershire, belonging to Lord Sandys; and Witley, belonging to the Earl of Shrewsbury.

Manufactures and Commerce.—Iron is largely manufactured at Dudley, in the neighbourhood of which there are likewise extensive coal-mines. In the northern part of the county a very large quantity of nails are made at there are likewise factories for fish-hooks and needles, and petros; there are also many glass works. The glass is manufactured at Stourbridge; a dressing-glove-trade is carried on at Worcester, and porcelain-manufactured to a considerable extent. The population of the southern and eastern part of the county is chiefly occupied with agriculture.

History.—The etymology of 'Worcester' is without plausibility adduced from 'Wyre-Cestre,' the Camp Castle of Wyre, under which name a considerable fort still exists in the neighborhood of Bewdley. The antiquities of the county little are little known; but there is however many evidences of its occupation by the Romans. During the Heptarchy, Worcester was the principal religious seat in England, and the inhabitants of the district were under ecclesiastical government. After the Conquest of the country, a government was changed. King of Worcester was changed, and the civil power confined to them. Of these first was Urso d'Abitot, one of William the Conqueror's lieutenants and favourites. This earl had many successors; and it retained or lost the name when it was mentioned by the county. The influence of the party which they had adopted in the government. During the war between Stephen and the Empress Matilda, and subsequently during the resistance of the barons to King John, the possessions of the earl of Worcester were frequently change by and by. The re-establishment of the Church of Worcester, to which the earl was very partial, laid hold of that opportunity of enlarging his possessions, by which they so much diminished the accommodations of the castle, as to render it no longer fit for the habitation of the sheriff's court, as it began to fall into decay. The greater part of the land was at that time in the hands either of the church or a few barons. Of the latter property great fortune took place after Perkin Warbeck's rebellion, and the earl was deprived of his French dukedom in consequence of the participation of several gentlemen in the county in the Powder Plot. Some of the conspirators in that plot retreated and were apprehended at Henslip, an old house, of which the most considerable edifice is situated between Droitwich and Worcester. During the Parliament the Worcestershire was on several occasions overrun by the contending parties. [Worcester.]

Antiquities.—The antiquities of this county are not...
markable. Three Roman roads have been traced: Ick- 
field Street, which ran from Alcester northwards to Staf- 
fordshire; a second road, which passed from Tewkesbury 
to Uley, Worcs., and so to Shropshire; and the 
ridgeway, which is the boundary of the county for a 
distance on its eastern frontier. Antient encampments 
may be traced at Malvern, at Bredon, and on the hills 
at Woodbury and Witney. There are many remains of 
early churches and of the ancient enclosures of 
Worcester, and the abbeys of Malvern, Bordesley, and 
Evesham. The most remarkable churches are the ca-
thedral at Worcester, the churches at Evesham, Malvern, 
Droitwich, Eastham, Naunton Beauchamp, Stockton, 
and Church Leach. (Nathan’s Worcestershire: Green’s An-
tiquities of Worcester; Corporation and Boundary Re-
ports, &c.)

STATISTICS.

Population and Occupations.—The county of Worcester 
domains a variety of manufactures in hardware, carpet-
making, gloves, and china; and in 1831 it ranked the 
seventeenth in the list of the manufacturing counties, 
which had the largest proportion of their population engaged 
in non-agricultural occupations. The proportion of the agricultural 
was distributed as follows:—8024 employed in 
manufactures; 13,695 in retail trades and handcrafts; 
2065 capitalists, bankers, and members of the professions; 
there was an agricultural labour of 2.550 domestic servants, 
besides 1706 male and upwards, 3338; and there were 
1102 female servants. As the returns of Occupations 
under the census of 1831 are not yet published, we give 
the following details from the Population Tables for 1831: 
At Dudley, Stourbridge, and Old Swinford collectively, 
about 450 men employed at the forge, which make 
trivis, chains, and the heavier kinds of iron tools and 
machinery; at Wolverley, Cradley, Belbroughton, 
and Bredon, about 311 men engaged in gun-barrels, edge-
tools, and files; at Tredbridge 300 men make needles and 
sewing-hooks, 187 at Feckenham, and a few at Alvechurch, 
lock-with-Bradley, Inkerrow, and Booley; at Droitwich 
alt-pans are made; watch-springs, in small quantity, at 
the number of a few manufacturers of china, and the 
1000 or more of these, 1169 at Bromsgrove, 575 at Dudley, 
583 at Old Swinford, 152 at Cradley, 122 at Hatfield, 
at King’s Norton, 87 at Worfield-Wigom, 53 at Bel-
broughton, 60 at Stourbridge, and 42 at Pedmore. At 
Kidderminster (including the forefield of Kidderminster: 
and the chapelery of Lower Milton) 2500 men are employed 
in making carpets, and preparing materials for that manu-
facture; at Worcester, and at its suburbs, nearly 1000 men 
and a much greater number of females are employed in 
making gloves; the finest description of china-ware is also 
made at Worcester, employing about 50 men, and many 
females in the burning and other delicate operations; 
at Bewdley, King’s Norton, and Yardley various articles 
are made, in moderate amount, chiefly of the hardware 
kind.

If the registered baptisms, marriages, and deaths bore 
the same proportion to the actual population as in 1801, 
the population of Worcestershire, in the aforementioned 
years, would have been as follows,—51,739 in 1750; 72,285 
in 1800; 78,650 in 1810; 87,312 in 1870; 104,132 in 1700; 
and 102,910 in 1790. The population actually enum-

tated at the following decennial periods was as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>67,631</td>
<td>71,702</td>
<td>133,333</td>
</tr>
<tr>
<td>1811</td>
<td>78,033</td>
<td>82,513</td>
<td>160,546</td>
</tr>
<tr>
<td>1821</td>
<td>90,239</td>
<td>94,165</td>
<td>184,404</td>
</tr>
<tr>
<td>1831</td>
<td>103,383</td>
<td>107,982</td>
<td>211,365</td>
</tr>
<tr>
<td>1841</td>
<td>114,664</td>
<td>118,672</td>
<td>233,336</td>
</tr>
</tbody>
</table>

From 1801 to 1841 the population increased 94,003, or 
40·2 per cent. In the three years ending June, 1841, the 
proportion of marriages to the population was 1 in 114; 
births 1 in 29; deaths 1 in 48; the proportion for Eng-
land being respectively 127, 51, and 40. In the same 
three years, the proportion of persons under 21 years of age 
under 21 years of age was 15 to 17 for women and 6 to 12 for men; 
and in England and Wales 17 to 9 for women, and 4 to 9 for men. (Fourth Report of the Registrar-General.) It 
appears from the Census Returns of 1841, that 183,964 persons, or 
76 per cent. of the population, were born in the county; 
46,175 persons, or 19.7 per cent., in other counties of 
England and Wales; 80 persons, or 1 person per 1000, in 
Scotland; 1411 persons, or 6 per 1000, in Ireland; 16 
persons were born in foreign countries, of whom 12 were 
British subjects born in foreign countries; and the place 
of birth of 1151 persons was not ascertained. The number of persons to a square mile was 322 in 1841. 
The number of parishes is stated to be 173 in the Popula-
tion Returns for 1841; and the population is actually given 
for 296 separate places. The population, &c. of 
each hundred and borough in 1841 is shown in the fol-

<table>
<thead>
<tr>
<th>Area</th>
<th>Houses</th>
<th>Persons</th>
<th>Ages</th>
<th>Persons Born</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hundred</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dudley</td>
<td>17,346</td>
<td>741</td>
<td>36</td>
<td>5</td>
</tr>
<tr>
<td>Bredon</td>
<td>67,980</td>
<td>3,526</td>
<td>266</td>
<td>6</td>
</tr>
<tr>
<td>Shrewsbury</td>
<td>112,185</td>
<td>3,526</td>
<td>266</td>
<td>6</td>
</tr>
<tr>
<td>Old Swinford</td>
<td>159,795</td>
<td>4,297</td>
<td>407</td>
<td>54</td>
</tr>
<tr>
<td>Belbroughton</td>
<td>91,955</td>
<td>5,504</td>
<td>374</td>
<td>44</td>
</tr>
<tr>
<td>(Borough)</td>
<td>1,600</td>
<td>331</td>
<td>52</td>
<td>12</td>
</tr>
<tr>
<td>Cradley</td>
<td>2,150</td>
<td>885</td>
<td>62</td>
<td>5</td>
</tr>
<tr>
<td>Hatfield</td>
<td>1,060</td>
<td>2,850</td>
<td>396</td>
<td>7</td>
</tr>
<tr>
<td>City</td>
<td>355</td>
<td>3,056</td>
<td>760</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>459,710</td>
<td>46,919</td>
<td>2,092,348</td>
<td>144,660</td>
</tr>
</tbody>
</table>

1831 the number of inhabited houses was 41,646, oc-
cupied by 43,512 families, and there were 302 houses 
lying, and 2096 uninhabited. 

3. Unemployed for the year ending March 31st, 1834, 
was 8,612. In the total difference in the sum expended 
in that year and 1827 was 38,022, or 29 per cent. 
Especially, in relief and maintenance, 18,345, or 22 per cent.; 
in suits of law, &c., 2572, or 66 per cent.; and in mis-
cellaneous expenses 2915, or 66 per cent. The number of 
poor-law unions is 13, comprising 218 parishes, which 
had a population of 211,365 in 1831: a number of these 
parishes are in the adjacent counties. Each of the under-
mentioned places is the centre of a union; and the sums 
expended in the year ending March 31st, 1834, under the 
heads of in-maintenance, out-relief, and establishment and 
relief, and salaries, were as follows:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>66,607</td>
<td>66,767</td>
</tr>
<tr>
<td>1834</td>
<td>60,500</td>
<td>60,635</td>
</tr>
</tbody>
</table>

The expenditure for the year ending March 31st, 1834, 
was 8,612. In the total difference in the sum expended 
in that year and 1827 was 38,022, or 29 per cent.

1833 | 66,607 | 66,767 |
1834 | 60,500 | 60,635 |
The number of persons relieved in these unions during the quarters ending Lady-day, 1841 and 1842, were as follows:—In 1841—In-door, 2,298; out-door, 17,228; total, 19,527, of whom 5,050 were adult-bodied paupers; in 1842—In-door, 2,297; out-door, 15,749; total, 23,267, of whom 6,228 were adult-bodied paupers. The proportion in 1841 of 2.4; and in 1842 of 1.9, to the total population was 7 per cent., which is 2 per cent. less than the average for England.

The expense for maintenance and out-relief was 62,233l. for the year ending Lady-day, 1842, being an increase of 8 per cent. on the preceding year. There were 285 lunatics and idiots chargeable on the poor-rate in 1836, or 1 in 789; in England, 1 in 1033; and in August, 1842, the number chargeable was 284. In 1833-6 there were 1058 bastard children chargeable on the poor-rate, or 1 in 200 of the whole population; in England, 1 in 200. The number of illegitimate births in 1830 was 345, or 1 in 19; the proportion for England being 1 in 20.

The number affiliated in 1834-5 was 127, and 82 in 1835-6.

The annual value of real property assessed to the property-tax in 1815 was 799,600l.; property assessed to occupiers, 600,000l.; and the value of the rents, professions, &c., were assessed at 274,456l. In 1825-6 the centesimal proportion of the various descriptions of property assessed was:—land, 74.9 per cent.; dwellings, houses, 18.9 per cent.; mills, factories, &c., 9.7 per cent.; manorial profits, &c., 25 per cent. The net annual value of real property assessed to the poor-rate in 1841 was as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>On landed property</td>
<td>£505,610</td>
</tr>
<tr>
<td>Dwelling-houses</td>
<td>£320,007</td>
</tr>
<tr>
<td>All other kinds of property</td>
<td>£65,625</td>
</tr>
</tbody>
</table>

The total amount levied for poor-rate in the above year was 96,185l., being a rate of 1s. 11d. in the pound on the annual value of real property assessed. The total annual value of property in the county was in 1841 about 2.4l. per acre.

The rate was levied at different periods, and the principal disbursements for the same periods, are shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Income</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>£4,175</td>
<td>£5,636</td>
</tr>
<tr>
<td>1821</td>
<td>£5,985</td>
<td>£7,703</td>
</tr>
<tr>
<td>1831</td>
<td>£8,974</td>
<td>£10,755</td>
</tr>
<tr>
<td>1833</td>
<td>£10,755</td>
<td>£12,755</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges</td>
<td>33</td>
</tr>
<tr>
<td>Gaols</td>
<td>258</td>
</tr>
<tr>
<td>Prisons</td>
<td>1,145</td>
</tr>
<tr>
<td>Prosecutions</td>
<td>644</td>
</tr>
<tr>
<td>Constables and</td>
<td>463</td>
</tr>
<tr>
<td>Vagrants</td>
<td>238</td>
</tr>
</tbody>
</table>

The particulars of the county expenditure in 1834 are as follows:—Bridges, building, repairs, &c., 186l.; gaols, houses of correction, and maintaining prisoners, 3,265l.; processes, &c., 1,326l.; conveyance of prisoners before trial, 529l.; conveyance of transports, 321l.; vagrants, apprehending and conveying, 297l.; constables, high and special, 201l.; coroner, 249l.; miscellaneous, 91l.; total, 285l.

The amount levied for local roads and highways, and the expenditure thereon, were as under in 1839:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streets and roads repaired under local acts</td>
<td>44</td>
</tr>
<tr>
<td>Turnpike roads</td>
<td>425</td>
</tr>
<tr>
<td>All other highways</td>
<td>1,464</td>
</tr>
</tbody>
</table>

The number of turnpike trusts, in 1810, was 22; the income from tolls, 39,631l.; parishes compositions in lieu of statute duty, 557l.; and total income, 42,884l., including 6,095l. borrowed on security of the tolls. The total expenditure for the same year was 35,600l., including a debt of 56,890l. paid off, and 4,501l. for improvements. The total mortgage debt amounted to 17,094l. In 1834 the debt was equal to 2.8 per cent. of the annual value of the county in England the proportion of income to debt being 4:4 per cent. and the proportion of unpaid interest to the total debt was 1.2 per cent.; in England 12 per cent.

The church-rates amounted to 5,035l. in 1839; and 7,024l. in 1842, applicable to the same objects, were derived from other sources, the amount from estates and rent-charges included under this head, being 1,106l. in 1832. The total 6,800l. was expended in 1839 for the purposes of the establishment, of which 5,041l. were for repairs of churches. There was a debt of 7,800l. on church-rate.

Crime.—Number of persons charged with criminal offences in the septennial periods ending 1819, 1829, 1842.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of persons</th>
<th>Number of convictions</th>
<th>Number of acquittals</th>
<th>Number of commitments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1813-18</td>
<td>1,368</td>
<td>1,368</td>
<td>0</td>
<td>1,368</td>
</tr>
<tr>
<td>1819-24</td>
<td>1,368</td>
<td>1,368</td>
<td>0</td>
<td>1,368</td>
</tr>
<tr>
<td>1829-34</td>
<td>1,368</td>
<td>1,368</td>
<td>0</td>
<td>1,368</td>
</tr>
<tr>
<td>1842-47</td>
<td>1,368</td>
<td>1,368</td>
<td>0</td>
<td>1,368</td>
</tr>
</tbody>
</table>

In 1841 the proportion of persons convicted to the population of the county, was 1 in 393; in England, 1 in 192.

Of 699 offenders (507 males and 192 females) tried in the assizes and sessions in 1842, there were 48 convicted with offences against the person; 58 with offences against the property committed with violence; 463 (including 25 cases of simple larceny) with offences against property committed without violence; 107 with malicious offences against property; 14 were charged with forgery and uttering base coin, and 46 with unlicensed trade. Of 416 persons convicted, 1, upon whose sentence of death was respited for life; 6 other offenders were also transported for 7, 10, 13 for periods above ten and not exceeding fifteen years; and 50 for terms of seven years; making 63 transported. None were sentenced to imprisonment for periods exceeding two years; 8 were imprisoned for a period not exceeding two years; 48 for above six months and not exceeding one year; and 284 for six months and under, and 15 were whipped. Of the 191 persons acquitted, 96 were found guilty on trial or in evidence; 58 were discharged; and in 21 instances there was no prosecution.

The total number of persons convicted, 45 per cent, were between the ages of 15 and 25; 16 per cent, between 25 and 30; and 16 per cent, between 30 and 40 years age. The degree of instructed in crime among those of the 23 cases: 200 males and 50 females could both read and write; 293 males and 44 females could read but not write; 19 males and 7 females could read but not write; and 4 males had received a superior education. The proportion of un instructed individuals in the county was in an average of several years was 98-5 per cent.; in England and Wales 89-3 per cent.

Savings' Banks.—There are nine of these institutions in the county, and the proportion of deposits to the population is higher than usual. The number of depositors is about 20 persons; and 1 depositor under 20l. in 30 persons. The average amount invested by all classes of depositors was 32l. in 1841; in England, 25l. The number of deposits and amount of deposits in each of the following years were as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of deposits</th>
<th>Amount of deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1826</td>
<td>5,303</td>
<td>25,825</td>
</tr>
<tr>
<td>1831</td>
<td>3,503</td>
<td>15,035</td>
</tr>
<tr>
<td>1836</td>
<td>2,703</td>
<td>10,515</td>
</tr>
<tr>
<td>1841</td>
<td>2,403</td>
<td>7,782</td>
</tr>
</tbody>
</table>

The distribution of the sums invested in 1830, 1834, and 1840 is shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount of deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>£23,750</td>
</tr>
<tr>
<td>1834</td>
<td>£27,050</td>
</tr>
<tr>
<td>1840</td>
<td>£29,700</td>
</tr>
</tbody>
</table>
The deposits of 105 friendly societies, not reckoned above, amount in 1840 to 11,014; and 7118, were invested by 139 charitable institutions.

**Elective Franchise.**—The actual number of county voters registered, in 1838, in the eastern division was 5687, and 4673 in the western division; and in 1839-40 the numbers registered were as under:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>4509</td>
<td>3170</td>
<td>7679</td>
<td>7764</td>
<td>7764</td>
<td>7764</td>
</tr>
<tr>
<td>Coptholders and customary Tenants</td>
<td>221</td>
<td>196</td>
<td>417</td>
<td>403</td>
<td>403</td>
<td>403</td>
</tr>
<tr>
<td>Leaseholders for life or term of years</td>
<td>117</td>
<td>151</td>
<td>268</td>
<td>321</td>
<td>321</td>
<td>321</td>
</tr>
<tr>
<td>50% Tenants at will</td>
<td>1005</td>
<td>838</td>
<td>1843</td>
<td>1814</td>
<td>1814</td>
<td>1814</td>
</tr>
<tr>
<td>Trustees and mortgagees</td>
<td>32</td>
<td>27</td>
<td>59</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Qualified by office</td>
<td>10</td>
<td>4</td>
<td>14</td>
<td>31</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Joint and duplicate qualifications</td>
<td>34</td>
<td>2</td>
<td>36</td>
<td>59</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td><strong>Total...</strong></td>
<td><strong>6523</strong></td>
<td><strong>4589</strong></td>
<td><strong>11,112</strong></td>
<td><strong>10,917</strong></td>
<td><strong>10,917</strong></td>
<td><strong>10,917</strong></td>
</tr>
</tbody>
</table>

**Education.**—Summary of Returns made to Parliament in 1833—

<table>
<thead>
<tr>
<th>School</th>
<th>Total number of children under daily instruction</th>
<th>Number of children under daily instruction</th>
<th>Number of children under daily instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>77</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>Number of infants at such schools; ages from 2 to 7 years</td>
<td>77</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>Males</td>
<td>903</td>
<td>903</td>
<td>903</td>
</tr>
<tr>
<td>Females</td>
<td>1016</td>
<td>1016</td>
<td>1016</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>411</td>
<td>411</td>
<td>411</td>
</tr>
<tr>
<td><strong>Total...</strong></td>
<td><strong>2578</strong></td>
<td><strong>2578</strong></td>
<td><strong>2578</strong></td>
</tr>
<tr>
<td>Daily schools</td>
<td>474</td>
<td>474</td>
<td>474</td>
</tr>
<tr>
<td>Number of children at such schools; ages from 4 to 14 years</td>
<td>474</td>
<td>474</td>
<td>474</td>
</tr>
<tr>
<td>Males</td>
<td>7,310</td>
<td>7,310</td>
<td>7,310</td>
</tr>
<tr>
<td>Females</td>
<td>5,581</td>
<td>5,581</td>
<td>5,581</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>2,632</td>
<td>2,632</td>
<td>2,632</td>
</tr>
<tr>
<td><strong>Total...</strong></td>
<td><strong>15,523</strong></td>
<td><strong>15,523</strong></td>
<td><strong>15,523</strong></td>
</tr>
<tr>
<td>Schools</td>
<td>551</td>
<td>551</td>
<td>551</td>
</tr>
<tr>
<td>Total of children under daily instruction</td>
<td>17,858</td>
<td>17,858</td>
<td>17,858</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>252</td>
<td>252</td>
<td>252</td>
</tr>
<tr>
<td>Number of children at such schools; ages from 4 to 15 years</td>
<td>252</td>
<td>252</td>
<td>252</td>
</tr>
<tr>
<td>Males</td>
<td>9,002</td>
<td>9,002</td>
<td>9,002</td>
</tr>
<tr>
<td>Females</td>
<td>9,707</td>
<td>9,707</td>
<td>9,707</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>1,796</td>
<td>1,796</td>
<td>1,796</td>
</tr>
<tr>
<td><strong>Total...</strong></td>
<td><strong>20,798</strong></td>
<td><strong>20,798</strong></td>
<td><strong>20,798</strong></td>
</tr>
</tbody>
</table>

**Maintenance of Schools.**

<table>
<thead>
<tr>
<th>Description of Schools</th>
<th>By endowment.</th>
<th>By subscription.</th>
<th>By purchase and purchase.</th>
<th>By rate and poll.</th>
<th>Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Schools</td>
<td>10</td>
<td>39</td>
<td>50</td>
<td>90</td>
<td>104</td>
</tr>
<tr>
<td>Sunday Schools</td>
<td>87</td>
<td>333</td>
<td>206</td>
<td>726</td>
<td>1,025</td>
</tr>
<tr>
<td>Total...</td>
<td>97</td>
<td>404</td>
<td>256</td>
<td>816</td>
<td>1,329</td>
</tr>
<tr>
<td>Total...</td>
<td>279</td>
<td>853</td>
<td>218</td>
<td>698</td>
<td>1,267</td>
</tr>
<tr>
<td><strong>Total...</strong></td>
<td><strong>379</strong></td>
<td><strong>1,257</strong></td>
<td><strong>284</strong></td>
<td><strong>1,582</strong></td>
<td><strong>3,214</strong></td>
</tr>
</tbody>
</table>

**Education.**—Summary of Returns made to Parliament in 1833—

**Education.**—Summary of Returns made to Parliament in 1833—

**Maintenance of Schools.**

The schools established by Dissenters, included in the above table, are—

<table>
<thead>
<tr>
<th>School</th>
<th>Number of children under daily instruction</th>
<th>Number of children under daily instruction</th>
<th>Number of children under daily instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily schools</td>
<td>18</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Sunday-schoo</td>
<td>81</td>
<td>8,999</td>
<td>8,999</td>
</tr>
<tr>
<td>Infant and other daily schools</td>
<td>278</td>
<td>8,843</td>
<td>8,843</td>
</tr>
<tr>
<td>Sunday-school</td>
<td>144</td>
<td>11,973</td>
<td>11,973</td>
</tr>
</tbody>
</table>

**Lending libraries of books are attached to 35 schools.**

**Twenty-six Sunday-schools, attended by 849 children, are returned from places where no other school exists.**

**Twenty-three schools, containing 1828 children, were both Sunday and day schools.**

**The number of boarding-schools is fifty-four, and the scholars are included in the above returns.**

**The total number of children returned as attending Sunday-schools, and day schools, was 30,434; in 1841 the total number of children in the county between the ages of 5 and 10 was 19,312, and 17,690 were between 10 and 15; total, 37,002; or from 3 to 15 the total number of children in the county was 43,149.**

**On an average of three years, 1838-41, the number of persons married who signed the register with marks was 46 per cent. for the men and 61 for the women, the average for England being respectively 33 and 49.**

P. C. No. 1791.

**WORD.** [NOTION, NOTIONAL; VRBR.]
the diet of the independent labourer, but that of the majority of the persons who contribute to their support' (p. 31). And yet, by 30 Geo. III., c. 49, passed in 1790, the right of visiting any workhouse at all times of the day was conferred on justices of the peace and clergymen, and on their representation the overseers were liable to be summoned at quarter-sessions, when the justices could make orders and regulations for the remedy of any defects in the workhouse management. The chief recommendation of the Commissioners of Poor-Law Inquiry in 1833 was to unite parishes for better workhouse management. This is the origin of the Poor-Law Unions. As soon as the Poor-Law Commissioners were appointed, they immediately directed their attention to the general adoption of the principles of the system. They laid emphasis on the encouragement of pauperism, and for the establishment of independent habits amongst the labouring classes, is founded on the workhouse system. (Second Annual Report, p. 6.) Out-door relief is prohibited in a number of Unions. The Bench of Guardians and watch committee of the parishes occupied by paupers have been sold. New workhouses, capable of containing from one hundred to five hundred inmates and upwards, have been erected in nearly every Poor-Law Union, Boards of Guardians being assisted by grants of money, and the workhouse is added in twenty or more parishes. Rules and regulations for the government of the Poor-Law Unions have been framed by the Poor-Law Commissioners. In the first place, a suitable classification of the inmates is effected. They are at least divided into the following classes:—1. Women, and women's suckling infants. A separate ward or area is appointed for these children, 2, able-bodied men and youths above the age of fifteen years; 3, boys above the age of seven and under that of fifteen; 4, women infirm through age or any other cause; 5, able-bodied women and girls above the age of fifteen years; 6, girls above the age of seven and under that of fifteen; 7, children under seven years of age. The subdivision may be carried still further, at the discretion of the guardians, if the workhouse will admit of it. The maximum number of persons to be admitted in each house is fixed by the Commissioners. To each class is assigned a ward, and communication between the different wards is not allowed. Married couples are separated, exceptions being made in certain cases in favour of classes 1 and 4. The inmates under the age of any child in the same workhouse is allowed to see such child daily in a room appointed for the purpose. Mothers of children under seven years of age are permitted to have access to them 'at all reasonable times,' and so long as any mother is suckling her child she is permitted to it at all times of the day. Proper care is instructed in reading and writing and the principles of the Christian religion. The diet of each workhouse is fixed by the Commissioners, and it varies in different districts, regard being paid to the general dietary of the district. It is provided for in the first instance to do so by a pauper, the master or matron is bound to weigh the allowance of provisions served out to any pauper in the presence of the said pauper and two other persons. The accuracy of the following passage, taken from the 1st Section of the Poor-Law Commissioners' Report (p. 5), will not be disputed by any one who has visited a Union workhouse. The Commissioners say—'The necessary effect of our rules and regulations is to supply the inmates of a workhouse with wholesome food and sufficient clothing, a better bed than they are used to, a cleaner and a better ventilated room than they are used to inhabit, an immediate supply of medical attendance in case of illness, and to establish a degree of order and cleanliness in a labouring cottage. The provision made by the pauper has been accustomed to it; and it is owing mainly to the effect produced by the classification which is necessary to be observed in a workhouse, and to that degree of order and restraint which our rules encourage, that the workhouse principle is rendered really effective.'

The officers of a workhouse are—1, the master; 2, the matron; 3, a chaplain; 4, a schoolmaster and schoolmistress; 5, a medical officer for the workhouse; 6, a porter; besides six or eight assistants as the Board of Guardians may consider necessary. These officers are appointed by a majority of the guardians, but the Poor-Law Commissioners determine the amount of their respective salaries. The guardians may suspend the master, matron, chaplain, schoolmaster, schoolmistress, or medical officer for the workhouse, reporting such suspension, with the case thereof, to the Commissioners; and they may at once dismiss any other servant of the workhouse. The paupers of the several classes are to be kept employed according to their capacity, in such useful occupations as may be laid on refractory paupers by the master, with or without the direction of the guardians, by alteration of diet during a period not exceeding 48 hours, or by confinement for not more than 24 hours. The right to inflict punishments within a workhouse is by common law. Boys under 12 is to be confined in a dark room or during the night. Corporal punishment must be inflicted six days after the offence, and the particulars of the case must be entered in a book kept for the purpose; and no female child is to be punished for any misconduct. Paupers may quit the workhouse on giving 'a reasonable notice;' formerly a notice of three hours was required.

The admission of a pauper into a workhouse is effected by one of the following modes:—1, By a written or printed order signed by a relieving officer or overseer; 3, by the master of the workhouse, or the matron in his absence, or by the police without any order, in case of sudden and urgent necessity; 4, By Order of the Court of Petty Sessions, or by the police without acting as a member of the board; nor, 2, by a pauper of the peace; nor, 3, by a rate-payer of the parish. No pauper may bring cases of sudden necessity before the master of the workhouse, and he is bound to admit any case of sudden necessity. In the metropolis any person brought to the workhouse by police is at once admitted, if there is no suitable refuge, and will not be discharged until the expenses of maintenance is paid. The establishment charges of each Union workhouse are apportioned on a certain principle to the different parishes of the Union. The Court of Queen's Bench has decided that the workhouse is a board of rateable property. Under the Irish Poor-Law Act about 130 workhouses have been erected, and some of the largest will contain 2000 inmates.

(General Orders of the Poor-Law Commissioners; laley's Poor-Law Commissioners Acts; Annual Reports of the Poor-Law Commissioners.)

WORKINGTON. [CUMBRIA.]

WORKSOP. [NOTTINGHAMSHIRE.]

WORLD (UNIVERSAL). (Of recent German invention, for engraving on iron and glass.) Invented by a gentleman born at Peterborough in Northamptonshire, in 1730. He was a pupil of Grimaldi, and then of Bialot, a disciple of La Fage. Worldie is chiefly known for his etchings and engravings in imitation of Rembrandt; he copied almost all the work of his master, and there is a very good copy by him of the so-called Hundred Guilder piece. Worldie lived in black-lead, and with indiarubber, a medium, with extraordinary neatness. He made a set of one hundred and eighty beautiful drawings of the works of art. The designs were etched by himself, the plates of Rembrandt, amount to one hundred and forty; there are about seven or eight good portraits by him, likewise exact imitations of Rembrandt. Some of his admirers in his own time and since, have thought little of his etchings; Thomas Wolridge for the greater part of his life painted portraits in miniature; he afterwards with worse success performed them in oil; but at last acquired reputation and honor as etcher; the manner of oil paintings; he was a very easy task by the numbers of men who have counterfeited that master so as to deceive all those who did not have his works by heart. Worldie's imitations and his head in black-lead have grown astonishingly into his best piece is the whole length at St. John's College, MS. from Rembrandt: his print of the Theatre at Oxford and the act there, and his statue of Lady Dorothy Grafton, or very poor performances. Worldie's name was written prior to needlework with great skill. Worldie died at Hennemith in 1766.
Several and and This was Hbtoria De s-iarum, ft* known university. physic. university studied their Minnesingers May, (•Vita the physician studied 112, &c., give his bones the Antiquarian, and its great population, which in the time of the Hohenstaufen amounted to 60,000, and even after the Thirty Years' War was still 30,000, made it rich and powerful; but in the two next centuries its prosperity rapidly declined, chiefly in consequence of the strife in Germany and Sweden. In 1689 it was burnt by Melae, by the order of Louis XIV., and only the fine old cathedral resisted the efforts made to destroy it. Since then it has never recovered; some portions have been removed and the existing church is in a state of decay. The walls are large enclosures, some waste, some converted into vineyards and gardens, which were once covered with populous streets and fine buildings. Though the city offers therefore but a shadow of its former greatness, it is clear that the palace which occupied the site was already begun, and that since the beginning of this century there has been an improvement. The population was in 1801, 4800; in 1833, 6245; and it is now 8000 inhabitants, of whom the great majority are Lutherans. In 1010 there were only 70 Roman Catholic families, but in the 13th and 14th centuries these latter have been long established here, and enjoy privileges not allowed them in other parts of Germany. The most remarkable edifice is the venerable cathedral, which was founded in the eighth century, but has been restored and enlarged during the last century. It was finished in 1016. It is a plain Gothic building, with two towers at each end.

Worms is the seat of the provincial tribunals and of the consistory, and a manufacturer of paper, tobacco, and tobacco papers, and a good trade in corn, cattle, and wine grown in the vicinity, of which that called 'LIEBHOFER MILL' (or 'Our Lady's milk') is so named from its being produced in the neighbourhood of the Liebfrauenkirche (The church of Our Lady).

(Brockhaus, Conversations Lexicon; Hassel, Handbuch vol. v.; Murray, Handbook of Northern Germany; Stein, Geog. Lexicon; Stein, Handbuch by Hirschelmann; Fred. von Raumer, Die Hohenstaufen, or früher Zeit; F. von Raumer, Geschichte Europä's, seit dem Ende der 15 Jahrhunderte.)

WORMS.

WORMS, a town in the province of Rhineland, in the duchy of the Palatinate, militarily in the Empire, and ecclesiastically in the Electorate of Trier, 26 miles long, near the left bank of the Rhine, which formerly touched its walls, in a beautiful country, called by the Minnesingers the Wonnegau (the land of delight). The city is said to have originated with a Roman fortress, called Bobitamogus, or Augusta Vangionorum. After its destruction by the Vandals and Huns, it was rebuilt by the Franks about 475; it was called Worms, and became the seat of a count (Gaugraf), and subsequently of the dukes of Frisia, who styled themselves Counts of Worms. It was the seat of the residence of at least (for a considerable time) of Charlemagne, who held in his vicinity those primitive legislative assemblies which, meeting in May, were called Mai Lager, or Champs de Mai, in one of which assemblies the war with the Saxons was resolved on. The privilege of the Frankish and Carolingian courts continued here. Several diets of the German empire were held at Worms, among which were those of 1122, at which a convention was concluded between the emperor Henry V. and Pope Calixtus II.; that of 1455, which abolished the right of primate; and lastly, that of 1530, which amounted to a declaration of war against Charles V. towards the end of the middle ages the city, as a member of the Confederation of the Rhine cities, acquired great importance in the funds of the south of the Rhine, and in the event of the Hohenstaufen amounted to 60,000, and even after the Thirty Years' War was still 30,000, made it rich and powerful; but in the two next centuries its prosperity rapidly declined, chiefly in consequence of the strife in Germany and Sweden. In 1689 it was burnt by Melae, by the order of Louis XIV., and only the fine old cathedral resisted the efforts made to destroy it. Since then it has never recovered; some portions have been removed and the existing church is in a state of decay. The walls are large enclosures, some waste, some converted into vineyards and gardens, which were once covered with populous streets and fine buildings. Though the city offers therefore but a shadow of its former greatness, it is clear that the palace which occupied the site was already begun, and that since the beginning of this century there has been an improvement. The population was in 1801, 4800; in 1833, 6245; and it is now 8000 inhabitants, of whom the great majority are Lutherans. In 1010 there were only 70 Roman Catholic families, but in the 13th and 14th centuries these latter have been long established here, and enjoy privileges not allowed them in other parts of Germany. The most remarkable edifice is the venerable cathedral, which was founded in the eighth century, but has been restored and enlarged during the last century. It was finished in 1016. It is a plain Gothic building, with two towers at each end.

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which is esteemed the finest specimen of historical poetry in the language. When the duchy of Warsaw was established in 1808, he was made both a member of the council and dean in the chapter of the cathedral; and through the influence of the Czartoryski family, was soon necessary for his new position. He was seen to the bishopric of Cracow in 1815. Twelve years afterwards the emperor Nicholas raised him to the dignity of archbishop of Warsaw and primate of all Poland; but he was then labouring under infirmities which induced him to go abroad for medical advice, and while thus travelling, he died at Vienna, October 4th (o.s.), 1823.

Besides his Sidylla, he wrote several other poetical compositions of merit, and one of them, 'Sejm Wislicki,' or the Diet of Wilanow, though only the fragment of what was intended to be an epic, was found by some to display greater power than his first more celebrated production. His poetical fame however is fully rivalled by that of his prose writings. 'His sermons, speech, the author of the 'Letters on Poland,' excels in a boldness of conception akin to Pope of Heberd, and seem to be the instantaneous emanations from the pure source of religious morality—the more impressive, as they are couched in an energetic dithyrambic language, like that of Homer. His poetical advice, and while thus travelling, he died at Vienna, October 4th (o.s.), 1823.

Ten years later, on the downfall of Bestuzhev-Rumian, he became chancellor, and, so long as he held that arduous office, showed superior ability as a statesman; but after Catherine II. had ascended the throne, his influence waned, at least the enmity of several of the more powerful nobles towards him showed itself in such manner, that he sought to avoid worse consequences by absenting himself, as formerly, under the pretext that travelling was necessary for his health. Such an excuse was pointed to as his deputy in the meanwhile. On his return to Russia, finding his opponents no better disposed towards him than before, he solicited permission to resign office altogether, and retired to Moscow, where he died Feb. 13th.

Woronzew had many of the qualities that mark a superior statesman, and was in other respects a man of a noble character. He patronized the literature of his country in the person of Lomonosov, to whom he erected a monument. He also supported and advanced all the younger men and poets who had left. Count Michael's only offspring was his daughter, married to Count Alexander Strogonov; but he was the uncle of three females, the most distinguished of their time for beauty and for talents: these were the daughters of Countess Polyanovskaya, and Catherine, the less eccentric than accomplished Princess Dashkov. (Sensitizopoliticheskiy Lekakon; Beatus-Kamenenskiy, Somozna.)

WORSLEY, SIR RICHARD, Bart., was born in 1751, in the Isle of Wight. His father was Sir Thomas Worsley, and Richard succeeded to the title when he was about eighteen years of age. He soon afterwards travelled on the Continent, and remained a considerable time at Rome, where he purchased a variety of pieces of sculpture and other remains of ancient art.

Sir Richard Worsley, after his return to England, sat in the House of Commons for many years as one of the representatives of the borough of Newport in the Isle of Wight. He was comptroller of the royal household to George III., and also held the office of governor of the Isle of Wight, where he died in 1803.

Sir Richard Worlsey published a 'History of the Isle of Wight,' at Bath in 1815, in 8vo. The history is natural, civil, military, commercial, and European; but except in mere matters of historical detail, most of them dull enough. Worsley's work has been praised by Sir Henry Englefield's 'Description of the Isle of Wight,' and by Sir Walter Scott's 'Woodes,' and some are said to be written by Lord Byron, who was at his service while abroad. The greater part of this work was published by Sir Richard Worsley in London, folio. Sir Richard Worsley also published 'Museum Worsleiinum or, a Collection of antique Relics, Bustos, Statues, and Gems; with Views of Places in the Levant, taken during his tour. 1789, and published in London, in 1790.' He was in the arrangement and description of his collection by Ennio Quirino Visconti. It was published at Rome, and at the time of its publication was considered to be a type of any which had issued from the English press. Very copies were printed; some authorities say only fifty, but others two hundred and fifty, and the total expense for Richard was about £2,000.


WOOTON, EDWARD, was born at Oxford in 1548. He studied at Christ Church, and took his Bachelor's degree in 1513. He was subsequently appointed to a fellowship at Corpus Christi College. In this position he remained till 1520; he then travelled into Italy, and having visited the principal cities in his way, arrived in Vienna in 1523. He took his degree of Doctor of Medicine at Oxford in 1525, and became a Fellow of the College of Physicians of London. He was afterwards appointed physician to Henry VIII. He devoted much time to the study of natural history, and published at Fano in 1562, a work entitled 'De Differentia Animae.' This work is spoken highly of by Gesner. It does not contain any new matter of his own, but was an e and in the state, and has been used for many years. He began a history of insects, but this work was never published. He died in 1564. (Hitchin's "Biography Medica.")

WOTTON, SIR HENRY, was born 30th March, 1568. O. S. was a gentleman in the household of Isaac Walton, called Bolton or Buerton Place, in the more modern accounts written Boughton Hall, in the county of Boughton-Malherbe, in the county of Kent. Here he resided, several of whom had held distinguished engagements in the state, as well as in the Church. His father, Thomas Wotton, Esq., was twice married: first to Elizabeth, daughter of Sir John Maitland, Knight, by whom he had three sons; Edward, knighted by Elizabeth I. and in 1603 raised to the peerage as Baron Wotton. He was knighted by Elizabeth; secondly, to Eleanor, daughter of Sir William Finch, of Eastwell in Kent, and widow of Robert Martin, Esq., of the same county, by whom he had Henry, the subject of the present notice.

His grandfather, Sir Henry, stated to have been his brother; he then had a resident tutor; afterwards he was sent to Winchester school; thence, at the age of sixteen, he was removed to Oxford, and admitted a gentleman-commoner of New College; finally, two years after in 1587, he was returned to Queen's College, and was a member of this society he composed, at the desire of the provost, a tragedy entitled 'Tancredo' (in which Iago is not stated), which, according to Walton, was greatly admired. But it soon after became apparent that about the twelfth year of the reign he proceeded Master of Arts, on which occasion he read with great applause three lectures, in Latin, on the eye, and Woot, although he could not discover any record of his admission to the degree, that on the 6th of June, 1588, he was profe
grant, or petition, to the University, to be admitted to the
reading of any of the books of Aristotle's Logic; which
writings...probably for his degree of A.B. After
his optical lectures, Wotton tells us, he was taken into
the closest intimacy by the learned Italian Alberic Gentili,
then professor of the civil law at Oxford; and from him he
acquired not only a large knowledge of both law and
mathematics, but an accurate knowledge of the Italian
language. In the next year, 1586, his father died,
leaving him with three younger sons an annuity of a hundred
marks; and Wotton intimates that this event prevented his remaining
so long at Oxford as his friends once intended; afterwards
he was called for the services of the law, till after his father's death; at which time he was about
the twelfth year of his age...and then laid aside his
books and betook himself to the useful library of travel.
But one of his letters to Lord Zouch, dated 10th July,
1585, says that he had been three years upon his
travels. Wotton goes on to state that he was abroad almost
nine years, one of which he spent in France, and most of
that in Geneva, where he became acquainted with Theos-
dos Beza (then of great age), and with James Camonbin
(induring whose time Wotton had been lodged: 'Three
of the remaining eight years,' it is added, 'were spent in
Germany; the other five in Italy...where, both in
Iona, Venice, and Florence, he became acquainted with
the most eminent men for learning and all manner of arts,
as picture, sculpture, music, oratory, geometry, em-
manual arts, even arts of interior nature; of all which he
was a most deep lover; and a most excellent judge. He
retired out of Italy into England about the thirteenth
event of May, 1587, and therefore spent the rest of the
year at person and comportation; for indeed he was of a most
self of stature, and of a most persuasive behaviour...'
But notwithstanding the particularity with which all this is
related, there must be some error. The account would
run that Sir Edward Wotton had been elected to the Council
of Ireland, at the earliest, and he was now, his biographer
proceeds to inform us, taken into the service of the Earl
of Essex as one of his secretaries, and 'did personally
attend the earl's councils and employments in two voyages
afterwards, at the ears of Lord Mortimer, who was in the
early last into Italy; that voyage wherein then he did
most provoke the queen to anger...'
Now Essex set
out on his first expedition to Spain in June, 1586, and on
his second in August, 1587; both dates antecedent to that
when Wotton had been elected to the Council of Ireland.
It is probable that Wotton either went abroad sooner,
or did not stay away from England so long as his
biographer makes him to have done. Essex went to Ire-
land in March, 1589, and returned in September of the
same year. Wotton was then in Paris, and probably met
him. Wotton tells us, as soon as he heard of Essex's second approach and
commission to the Tower, 'did very quickly, and as pri-
vately, glide through Kent to Dover, without so much as
looking toward his native and beloved Boston; and was,
by the help of favorable winds and liberal payment of
the mariners, within sixteen hours after his departure from
London set upon the French shore.' There is no reason
however to suppose that Wotton was involved in the earl's
adventure, like his brother secretary Cuffe, who was hanged.

It must be observed in consequence of his residence among his old friends at Florence, whence
after some stay he went on a visit (called his fourth) to
Rome, returning to Florence, Wotton says, 'about a year
before the death of Queen Elizabeth,' which would be
about the year 1589, and was dismissed by the earl's
demand: 'It appears to have been in this first year of his
residence abroad that he drew up his treatise entitled The
State of Christendom, giving a perfect and exact discovery
of every political and secret Mysteries of State treated,
in most of the Courts of Europe; with an Ac-
account of their several Claims, Interests, and Pretensions,'
first printed in Bologna in 1592, and again in 1597. It was
immediately after Wotton's return from his visit to Rome,
that the nascent genius of Wotton announced him as the Biographer of the crown. He wrote several letters discussing a design to take away
the life of King James of Scotland, and on the advice of
his secretary Signor Vieta, who was an intimate friend of
Wotton, resolved to employ Wotton to communicate the
affair to James, and accordingly, says Wotton, 'acquainted
him with the secret, and, being well instructed, dispatched
him into Scotland with letters to the king; and with
those letters such Italian antidotes against poison as the
Scots till then had been strangers to.' This mission proved
the foundation of Wotton's after fortunes. Calling himself
Octavio Baldi, and assuming the character of an Italian,
he proceeded by way of Amsterdam through Norway, and
found King James at Stirling. Having announced himself as an ambassador from the duke of Tuscany,
he was soon admitted to the royal presence through the
hand of Lord Grey, a gentleman of the bedchamber, not
however without having been questioned when he came
to the presence-chamber door to lay aside his long rapiers.
Three or four lords were standing distant a few
steps from the chamber; on seeing whom he hesitated; but
James desired him to be bold and deliver his message,
which he would undertake for the secrecy of all that were
present. 'Then,' continues the narrative, 'did Octavio Baldi
deliver his letters and his message to the king in Italian;
which, when the king had gratefully received, after a little
manner Octavio Baldi steps to the table and whispers to the
king in his own language that he was an Englishman, be-
seeking him for a more private conference with his maj-
esty; and that he might be concealed during his stay in
that nation; which was promised, and really performed by
the king during all the king's stay. Wotton, however,
two months, all which time was spent with much pleasantness
to the king, and with as much to Octavio Baldi himself as
that country could afford.
A few months before Wotton's return to Florence news
arrived of the death of Queen Elizabeth; upon which, by
the grand-duke's advice, he immediately proceeded
England, where he found that James had not forgotten
him, but had already been making inquiry after him of his
friends in England. When Wotton arrived at London, the
king upon his arrival in London found holding the post of
comptroller of the household. Wotton immediately
received the honour of knighthood, and the next year (1604)
was sent as ambassador to Venice, accompanied by Sir
Robert Cuffe, as his secretary. Wotton stayed for a few
months at Augsburg, on his way whither, that he wrote in the album of a German friend his famous
definition of an ambassador—'Legatus est vir bonus
peregre missus ad mentiendum reipublicae causa' (an ambas-
sador is an honest man sent abroad to—'It is a com-
monly rendered, sent to lie abroad—for the good of his
country); which eight years after was published by the
learned and rancorous Caspar Schiapinnis, in a work against
King James, as a principle of the religion professed by that
monarch. Wotton's letters were immediately used by the
author, who was writing a history of the peace of
Utrecht; and another letter on the subject in violent abuse of Schiap-
nis, which Wotton wrote to a friend, Marcus Velsenus,
one of the chancellors of Venice; and another
writings. Wotton saying nothing of the equivoke in
the English term bin, which is a made principal point of
the story as it is commonly told; nor indeed does it appear
how he could have had any such double meaning in view
while writing in Latin. He had returned from this first
mission to Venice before he wrote his letter to Velsenus,
which is dated at London, 2nd December, 1612. The writer
of his Life, in the 'Biographia Britannica,' says that he
came home in 1610, and conceives that he was probably
therefor the just of the present and suitably furnished
parliament, which was sitting at Westminster. There is no
printed list of the members of this parliament, but Sir
Henry, in a letter dated a few days after its dissolution,
speaks of the late House of Commons by the expression
'our house.' At this time Wotton was engaged on a mission to the United Provinces, and on his
return in the beginning of the following year he was re-ap-
pointed to the Venetian embassy. He resided at Venice
three years, and then returned to England in July, 1615, with the
hope of being appointed to the place of secretary of state, vacat
by the death of Sir Ralph Winwood. But that event had
taken place a year and nine months before; so that here
again there is probably some mistake. According to the
ancient author, he was in 1641, the following year, sent
away abroad, first as ambassador extraordinary to the
duke of Savoy, and then several times into Germany upon
the affairs of the elector-palatine; 'after which,' it is
added, 'being remanded a third time to Venice, with
certain orders to return the round his business there,
returned not to England till the year of King James's
death,' that is to say, in 1625. But he was certainly back
here by 1624 at the latest; Walton says that he came to
London 'the year before King James died;' and even the
second edition of Biographia Britannica, proceeding some-
what inconsistently, to inform us that 'not long after his
arrival, upon the death of Mr. Thomas Murray in 1623, he
succeeded him in the provostship of Eton College.' Wal-
ton's narrative implies that this place was given him by
King James, who had previously, it seems, granted him
the reversion of the place of master of the rolls, then held
by Sir Julius Cesar; but Wotton, who was in a state of great
pecuniary necessity, required, we are told, a present sup-
port, and very gladly resigned his reversion upon getting
a grant of the provostship.

Sir Henry Wotton's principal writings are contained in
the two volumes entitled Religion Woessanae, first pub-
lished by Isaac Walton, with a Life of the author, in 1651,
and afterwards, with additional matter in each
impression, in 1654, 1672, and 1685. The principal pieces
of which it consists are—a treatise, long held in great esteem,
entitled 'Disputandni pruriitius ecclesiae scabies;' a second
edition published in London, in 1640; 'A Philosophical Survey
of Education, or Moral Architecture' (dedicated to Charles I.);
Characters of some of the English kings (in-
tended as materials for a History of England); a Latin
Panegyric Address to King Henry, which, as usual, never
reached Scotland in 1633 (first published in folio, at London,
in 1633), with an English translation by a friend of the author:
'a Parallel between the Earl of Essex and Villiers, Duke of
Buckingham,' first published in 1610, at London, in 1622; an
'Address of the View and Death of the Duke of Buckingham'
(first published in folio, at London, in 1642); some religious
Meditations; and a number of Letters and Poems. More
of his letters are in the 'Cabala;' and there are some poems
attributed to him, especially the 'Reliquiae,' a poem on
'State of Christendom' has been already mentioned.
The literary reputation of Sir Henry Wotton rests now prin-
cipally on his poetry, which, although consisting only of
some short pieces, is distinguished both by its general cor-
rectness, and in its happiest passages by a dignity of
thought and expression scarcely attained by any of his
contemporaries. In his lifetime he was famous for his
pointed sayings; but here the manner, as usual, probably
went as far as the matter in creating the impression that
was formed of him. There seems to have been no very
damaging or deep in his favourite verse, his author-
ship of which he directed should be recorded on his tomb,
'Disputandni pruriitius ecclesiae scabies;' 'The Ith of
disputation is the scab of churches.'

WILLIAM, a D.D. by Ainslie, is chiefly remarkable as an
instance of strength of memory, and early progress in the
acquisitions mainly dependent upon that faculty, was born
13th August, 1696, at Wrentham in Suffolk, of which
parish his father, the Rev. Henry Wotton, was rector.
When he was five or six years of age he had,
under the tuition of his father, who was a
good scholar, attained considerable facility in reading and
translating the Latin and Greek and Hebrew. Sir Philip Stapyl-
son, who knew him in a letter written about this time to
Ray, the naturalist, says, 'He is not yet able to parse any
language, but what he performs in turning the three learned
tongues into English is done by strength of memory; so
that he is ready to mistake when some words of different
signification have a very remote connexion. His father has
taught him by no rules, but only uses the child with
him, as if he were a child of five, teaching him to repeat
in remembering words: some other children of his age
seem to have as good a fancy and as quick apprehension.
In April, 1766, some months before he was ten years old,
the school was shut up for the summer, and he went to
London, where he made rapid progress, not only in the languages, given by
Chaldæa, Syriæ, and Arabic to the Latin, Greek, and
Hebrew, but also, it is asserted, in logic, philosophy,
theology, chronology, and geography. In 1769 he
finished his studies, and, being recommended to Dr.
Gilbert Burnet, then prebendary of the Rolls, and intro-
duced by him to all his learned acquaintances. Among other
persons whom he visited was Sir John St. Asaph, who,
as was highly pleased with a list of memory which Wotton produced, repeating
verbatim a sermon preached by the bishop, that he took him with
him to St. Asaph, and kept him there for some
weeks, paying him handsomely out of his
library. He then returned to Cambridge, where, by
the interest of Dr. Turner, bishop of Ely, he obtained a
chancery clerkship in St. John's, and where he took his degree of M.A.
in 1675. He then lived at Oxford, where, in 1679,
Lloyd gave him, with the income of Llandilo in
Bergshire; and he was soon after made chaplain to the
Duke of Nottingham, then secretary of state, who, in 1693
presented him to the rectory of Middleton Keynes in
Bedfordshire.

In 1694 Wotton published his first and best remembered
work, his 'Reflections on Antient and Modern Learning,'
which is a defence of the superiority of the antients
against the moderns. He answers to Sir William Temple, who had shortly before
him, in 'The Antients and Moderns,' to the question, in arguing against Pernault's
'Parallels de Anciens et Modernes,' which had appeared at Paris in 1687.
Wotton's performance is famous both for harsh
defence, called forth from Swift in his 'Battle of the Books,'
and for his friendship towards disputants, and his
enthusiasm for the controversy about the so-called
'Epistles of Phalaris' on the authenticity of the
'Epistles,' which had been attacked by
Temple, was disputed by Wotton; and it was in an
appendix to the second edition of the 'Reflections,'
written in 1697, that Bernard住宿, one of the first
drafts of his celebrated 'Dissertation,' demonstrating the
genuineness of the 'Epistles,' with a special reference to
his edition of them brought out by the Hon. Charles
Montagu, and distinguished himself more by his
rather than accuracy or profoundness of learning, and
the judgment was of no remarkable power; the inherent
of the 'Reflections,' accordingly, is not considerable.
Of many other books which he afterwards published
there is nothing either in life or death of any note.
Hickes, perhaps, of his 'View of Hickes's Archaeological Travels
of the Antient Northern Languages,' which was first
drawn up by Hickes himself, and was published in 1698;
and of which a second edition appeared in 1707.
Wotton's edition of the ancient Welsh laws, with a Latin
translation, which appeared in a folio volume in 1730, after his
death, under the title of 'Cyseithiriu Hywel Dda, as earl; Lege-
Wales, edited by Anœurn Owen, Esq., Oxford,
Lond. 1841. Wotton acquired such a command of the
Welsh language as to be able to preach in it. In
1727 he was a canon of the diocese of St. Asaph,
He died in
Wotton, a name by which he appears in a catalogue of
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WOUNDS, in Surgery, are solutions of the continuity of the soft parts of the body effected by some external agent, and attended with a greater or less amount of bleeding.

Wounds vary in their character according to the kind of instrument by which they have been produced, as well as the greater or less amount of force with which it has been applied. In order to facilitate the description of treatment surgical writers have divided wounds into several kinds. Thus they are spoken of generally under the terms incised, punctured, contused, lacerated, poisoned, and gunshot wounds. Wounds of particular parts requiring peculiar treatment are also described, as of the head, throat, chest, &c.

Incised wounds, cuts, or incisions are produced by cutting instruments, and are free from contusion and laceration. Punctured wounds or stab wounds are caused by pointed weapons, as bayonets, lances, nails, pins, &c., penetrating deep into the flesh. Contused and lacerated wounds are produced by the violent application of hard blunt and obuse bodies to the soft parts; and under this head might be included gunshot wounds. Poisoned wounds are those which are complicated with the introduction of a poison into the wounded part. Wounds are more or less dangerous according to the extent of soft parts they involve, the parts they occur in, and the state of health of the individual wounded. In small wounds, unless poisoned, the system generally suffers little in consequence, but when a large amount of soft parts are injured, symptoms of fever come on from twenty to thirty hours after the receipt of the wound, which require attention on the part of the surgeon, as, according to the constitution and circumstances of the patient, the fever may vary greatly, and require opposite modes of treatment. This fever is called symptomatic, and in most cases is inflammatory.

Incised Wounds. — The effect of a cut on any part of the body is to produce a gaping space, from which blood in most cases issues, and pain is felt. The blood arises from the blood-vessels of the part having been cut through or wounded, and the pain is caused by a similar injury to the nerves. The amount of blood that issues from a wound, as well as the pain, will always depend upon the nature of the part which is injured. Some parts of the body are very copiously supplied with blood-vessels which have few nerves, and vice versa. So that neither pain nor bleeding is constant according to the size of the wound. The immediate danger of incised wounds does not so much arise

In the perpendicular tube, which resists the egress of the gas.

We have already observed that various modifications of this apparatus have been proposed, an account of which may be seen in different chemical treatises: the above description is taken almost entirely from Dr. Henry's Elements.'
the skin about the wound cannot be kept too clean and free from impurities of every kind.

**Incised Wounds.**—These wounds are dangerous from their depth, and the internal egression of serum and blood which usually attend them. In consequence of this, these wounds are frequently followed by severe inflammation and suppuration. These results used to be attempted to be obviated by the practice of dilatation. This however is severely punished by the appearance of large collections of pus and inflammatory exudation over their surfaces. Setsone is recommended by the French surgeons for these wounds, but there are so many objections to it, that they are seldom used by surgeons in this country. Whether these wounds are unite by the first or second intention, they require to be healed upon the same general principles as incised and gunshot wounds.

**Incised and Lacerated Wounds.**—These result from the lollation of blunt, obuse, hard bodies, being forcibly driven against the living textures. Although these wounds may occur independent of gunshot, it is in the class of called gunshot that the best examples of lacerated and incised wounds occur. The rapid introduction of powerful machinery into the manufactures of this country renders incised and lacerated wounds of very frequent occurrence in our large towns. In these wounds there is seldom much bleeding, arising from the coaptation of the arteries becoming twisted and doubled up by the force of their removal and the much more liable to have been given by the bodies in them than incised wounds. Such wounds seldom unite by the first intention, but in their treatment this object should always be kept in view, as frequently portions of the wound may be induced to unite. During suppuration proceeding on, the same plan of treatment must be pursued as when these processes occur in incised wounds. The constitutional symptoms arising from these wounds are generally more severe than from any others, and require attention. Symptomatic fever must be treated according to the same general principles laid down for the treatment of fever. [Fever.] Another consequence of these wounds is that dreadful state of the nervous system called tetanus [Tetanus], which often resists all kinds of treatment.

**Poisoned Wounds.**—The principal forms of this class of wounds seen in this country arise from the bites of rabid animals, pricks and cuts received in dissention, and the bites of vipers and the stings of insects. The bites of rabid animals are unfortunately too common, and often in this country require the attention of the surgeon. When the poison is introduced into the system it produces the fearful disease known by the name of hydrophobia, for which medical science has not hitherto found a remedy. [Hydrophobia.] It is seen that all persons have been bitten by cattle, horses, or wolves in a rabid state, the wound should be immediately excised and the nitrate of silver (lunar caustic) applied to the wound.

**Dissecting Wounds.**—Under this head may be included all the accidents which animal and human hands exposed in the examination of the dead human body, but all those wounds after which ill consequences ensue, in which there is reason to suppose some poison generated. In an animal organisation has been introduced into the system. It is still sometimes discussed in books on surgery, as to whether the effects following these wounds are produced by a peculiar poison or are only the result of a slight wound in a constitution predisposed to disease. The first effect is the ill effects of these wounds among the medical men, as compared with the large number of persons liable to prick and cutting their fingers, must decide this question in favour of the existence of a poison. It is not, however, as is generally supposed, that putrescent and stinking substances advanced in decomposition are most injurious, for it is generally found that those sequelae which follow wounds from recent bodies, especially of persons who die of putrescible putridities. The consequences following these cuts are uneasiness and fear of the wound. Far is the absorbing process upon the arm begins, there is pain felt in the arm, and in the glands of the axilla; these symptoms are attended with more or less fever, and generally great anxiety. These symptoms sometimes increase, the cellular tissues of the arm and side become much reddened, those of the throat are perhaps the most common, and require the most prompt attention. These wounds are generally the result of attempted suicide, and vary in extent according to the greater or less determination of the individual at the time, and effects of the wound. The first thing to be attended to in these cases is to cut the hamstring, which must be done by passing between the wounded arteries.

**Wounds of particular parts of the body.**—When any part of the body is considered as being wounded, questions frequently arise as to the treatment, which can hardly be answered in general principles; hence the wounds of particular parts of the body require consideration. Wounds of the scalp are frequently accompanied with the effects of shock, or diverging a narrow arrow, or the violence of the wound. Wounds of the scalp are also frequently attended with severe inflammatory symptoms, and no injuries of the body are more attention and close watching than those of the scalp. If not treated with the greatest possible care, those of the throat are perhaps the most common, and require the most prompt attention. These wounds are generally the result of attempted suicide, and vary in extent according to the greater or less determination of the individual at the time, and effects of the wound. The first thing to be attended to in these cases is to cut the hamstring, which must be done by passing between the wounded arteries.
When the trachea is opened, the entrance of blood into the lungs should be avoided as much as possible, as its existence there as a foreign body may bring on inflammation of the lungs. When a wound occurs in the larynx above theematicus, every attention should be paid to removing anything that may irritate the glottis or prevent the free passage of air to the lungs. When the oesophagus is wounded, all the food of the patient should be administered by means of a tube passed through the mouth, nostrils, or the wound when opened; and if this is done for a cut-throat will attempt immediately to bring the edges of the wound together by sutures. If this be done, the chances are that the patient will die of suffocation, and death is certain if the wound has been lacerated, an attempt should be made gradually to bring together again the divided parts. This is frequently done with the most perfect success, and sometimes the very worst cases of cut-throat will recover. It will however happen that one of which he immediately afterwards the surgeon to meet all the difficulties that will arise in the treatment of cases where so many important organs are involved.

Wounds of the chest become dangerous when they involve the ribs of the thorax, and several important questions arise out of the nature and extent of these wounds. The most important complications are these: 1. The entrance of foreign bodies into the cavity of the thorax; 2. The injury of one or more of the intercostal muscles; 3. The fracture of one or more of the ribs; 4. The occurrence of emphysema from the wound; and 5. Extravasation of blood in the cavity of the thorax. Wounds of the abdomen, when superficial, require the same treatment as wounds generally. In pene-

(Woooverman, Philip, one of the most popular of Dutch, and after, in his turns, two or three years, he received his first instructions in art from his father, Paul Wouwerman, an obscure historical painter. He was instructed also by John Wynants of Haarlem, but his style was quite original, and was indebted little if at all to the works of his instructors. Wouwerman lived always at Haarlem, and he is generally considered and reported to have been one of those unfortunate painters who depended entirely upon the liberality of picture-dealers, and to have made his patrons rich while he lived in poverty. This does not appear to have been the case with the painter who states that Wouwerman's pictures rose immensely in value after his death, but that he was nevertheless a fortunate painter; and, in corroborated of the latter part of this assertion, he states that he gave his daughter 20,000 florins (Hendrick van der Heurn) was the son of his family, and that there is no truth in Hoobraken's report that he gave his daughter 20,000 florins dowry.

Wouwerman died in 1688, aged 48, and he was so dismally and piteously visited against the day of his death, and that it was so miserable and wretched, that he was only paid for his services in the field of battle, and a less charitable reason assigned for this destruction, it is feared they might fall into the hands of his brother Peter Wouwerman, who painted similar subjects with himself; a second account is, that the designs and studies which he burned were not his own, but principally Peter Leet's, and that he destroyed them that it might not be known how much he had made use of the labours of others. None of these stories may be true, but they at least show that Wouwerman, like many other men of genius, had his foils as well as his friends. Wouwerman must un-

(1.) WRAGBY. [Lincolnshire.] Wraingle, Carl Gustaf, son of the Swedish general Hermann Wrangell, governor of Livonia, who died July 10, 1664, and Peter, a military commander, was born at Skokiester on Lake Malaren, December 13, 1613. Sent abroad at an early age to acquire foreign languages, he passed a whole year in Holland, where he gained considerable insight into nautical matters and shipbuilding, and, impressing with his admiringly designed and coloured, and most appropriately introduced; they are also distinguished by the same rich transparency of colouring which characterizes the landscape part of his pictures.

Wouwerman's pictures are very valuable, and, notwithstanding his short life, are very numerous: one or more specimens are in almost every good collection in the northern parts of Europe. Many however of his brother Peter's are attributed to him, but though very similar to one another, they are not in all respects like. His pictures of horses are very inferior. He had another brother, John, who was a good landscape-painter. John died in 1680, and Peter in 1683.

Hoobraken, Schouburg, &c.; D'Argenville, Vie des Peintres, &c.)
The substantive Wrangler is hardly ever used, except as qualified by a date, and although the term has passed, the functions of the Bachelor's degree in the university of Cambridge (the word is unknown in Oxford) with such credit as to have had its name inscribed in the highest list, or of wranglers. Of these the first in merit is the Senior Wrangler, to which a candidate not accepted to the presidency of the University is apt to confound Wrangler with Senior Wrangler, that is to imagine that any one of their friends who may have obtained a wranglership must necessarily be the first man of his year. The second list is that of Second Wranglers, and the last the Third, or Junior Optimes. All who are in these three lists (which are collectively called the Tripos) are said to take the Bachelor's degree with honours, or to go out in honours; the first entitled to a college, abbreviated into the Pol, though they equally take the Bachelor's degree, are not supposed to be honoured. But in point of fact, the last of theJunior Optimes, or the last on the list of honours, has always been considered an unfortunate person, and by the phraseology of the word "wooden spoon" has long been attached to his place. It is not as if all were examined together, and the honours were selected out of the whole list: those who wish to go out in honours declare their intention and are examined separately; so that it frequently happens that the first of the honours-goers is a person of very inferior attainments to many at the head of the unhonoured multitude. With regard to the fictitious terms current in the universities, it should be known that all the seceders,"the heads of houses, professors, &c., generally adduced as nicknames invented by the students, and the term "Wooden Spoon" which is applied to these nicknames, is said to have been invented by a student with a wooden spoon, after an examination as it is styled in the grace of the Senate which established it, should use those words instead of "the little go, a term which was borrowed from the Oxonians as soon as the grace was passed.

There is no history extant of the original introduction of the terms, wrangler, senior optime, and junior optime. Hume, whose history of our universities has just been translated by Mr. Newman, says that every attempt he has made to obtain information on this subject has made him giddy with headache. A Cambridge man, however, finds no difficulty in seeing how the word was used, as applied to the manner in which an examination (not a public disputation) is passed. The examination which takes place in January, and of which a young man is said to "take his degree" (because in fact he then does all that will be asked of him, the rest having degenerated into mere form), is not an examination for the B.A. degree, but for the right of being admitted to perform the disputations necessary for a degree. All degrees were originally gained by disputations; the substitution of an examination, to see whether the candidates were fit to dispute, is a

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thing of comparatively modern times. The vice-chancellor, when he is examining candidates, admits the candidates not to the Bachelor's degree, but to suppose themselves to be entitled to it, and the person thus admitted is called a questioner. The question, which is of some interest, or of some other questioner and is the occasion for the examiners, and the person thus given to one of the fellows of whose duty it is present, the candidates of his college to the vice-chancellor. On the Thursday after Midsummer, the vice-chancellor declares all the questioners (who in the interval have been made admissible to the examination) for the next time, and assumed the name of the University. In the case of Tripos, 1747 for dollars: but the wranglers and some optimists form one list till 1732 inclusive. It is said that the regular order of previous years cannot be ascertained.

The British species of Wrasses belong to three subgroups of Labrus, viz. Labrus properly so called, the species which have the margin of the preopercle entire, and are opercular and opercular. The first species is Labrus, in which the first dorsal fin is divided, and the head is entirely smooth and scaled; the other is Crenilabrus, in which the preopercle has a distinct margin, and the cheek and opercles are scal.

The species are extremely variable in colour, and the species presented the most vivid orange, blue, green, and bright yellow being common in the genus. These colours are most beautiful in spring, just before the spawning season. They frequent the crevices of rocky shores, living among the larger weeds, and feeding on crabs and other crustacea. At articles of food they are not exclusively valued in British, the fish wanting firmness and flavour. In the Mediterranean however they are constant ornaments of the fish-market. The species comes to growth to anything from 8 to 10 lb. It takes a fairly large bait.

The following are natives of the British seas: 1. Labrus auratus, Bloch, the Ballan Wrasse, inhabiting chiefly the eastern coast, but also found in the Pacific Ocean, 2. Labrus labrus, Don, the English wrasse, the colours of which vary somewhat, Jenyns, the Corkling, our smallest species, but only four inches in length; 3. Labrus niger, Gmelin, a large and not uncommon kind; 4. Labrus tricolor, Gmelin, a beautiful red fish, with the black spots on each side of its back; 7. Labrus auratus, Gmelin, observed by Pernan, and, since by Mr. Cochrane and somewhat doubtfully as a true species; 8. Labrus janny, one of the most beautiful and valuable of our fishes, which is called the Mediterranean, where it is common on muddy ground in seven fathoms water, living among seaweed; 9. Ctenolabrus reale, the Gilthead, a common and handsome species of wrasse found in the Mediterranean; 10. Ctenolabrus cornutus, which is possibly only a variety of 11. Ctenolabrus gilchristi, known only from the description of Pennant, who found it in Anglet; 12. Ctenolabrus sardus, first observed by British by Mr. Coupland; 13. Labrus anax, found in the Mediterranean, and 14. Ctenolabrus osilis of Lusitania, not uncommon species.

(See Marshall's British Fishes for figures of all these.)

WRAY, ROBERT BATEMAN, an engraver of gene.

was a son of the Rev. William Wray, vicar of Newporton in Wiltshire; and afterwards vicar of Brackenhill in the same county, where Robert Bateman Wray was born on the 20th of March, 1715, ...both on the father's and the
another's side he was allied to some of the best families in the country. He was fourth in descent from Sir William Wray of Grocesthorpe, in the county of Lincoln, Bart., who was created Lord-club to the duke of Northumberlaad for 2d. But in the branch of art were the labours of native artists very liberally rewarded in those times, except in some rare instances.

The following are the most remarkable of Mr. Wray's works, and they are here placed in the order in which their merit is supposed by some competent judges to rank:

1. Dying Cleopatra, in the Medici, Med. 2. Heaven's, a head, a copy from the engraving in the works of Soho Square, who had recently invented a method of copying antient engraved gems, was so much impressed with the merit of Mr. Wray's works of the same kind, that he engaged him to engrave some of those of his selection. Mr. Wray's name thus became extensively known, and his original productions were sought after with avidity even in Italy. At a subsequent period, when Henry, eighth Lord Arundel, visited Rome to collect works of art for the purpose of decorating his magnificent mansion of Wardour, he was surprised to hear of the fame of a man who was then residing within a few miles of his own gate in England; for in the year 1759, after a residence of more than thirty years in London, circumstances had induced Mr. Arundel to fix himself in Church Street, Salisbury. To an artist of the celebrity which he had now acquired, locality of abode was of little moment.

It was at Salisbury that he produced some of his best works, the base on which his reputation with posterity will chiefly depend. The difficulty of engraving figures on hard stones in the manner of the antient Greeks is shown by its rarity in modern times; and although it has been cultivated in Italy, it is not a common success, in England is scarce has had a rival. If some of the Italians have surpassed him in facility of execution, and in the number of their works, none have been his superiors in expressing the actions, and in female grace and beauty. That scope of his talents will be easily imagined, when it is stated that the head of the dying Cleopatra, which he esteemed the most perfect, was the most difficult of his works, was
Locality.—Europe; America.

Example, Troglodytes europaeus.

Locality.—Switzerland.

Generic Character.—Bill moderate, nearly straight; the culmen gently inclining towards the tip, which is rather; the gonys straight. Wings short, rounded; the first and secondary tail-feathers are rounded to the tips ovate, but, with the shaft, forming a fine soft point beyond the webs. Tailasus lengthened. Middle toe longest; lateral toe much shorter, and very unequal; the outer longest, and slightly connected to the middle; inner toe shortest, and clut to the base; hinder toe shorter than the tarsus. All the claws slightly curved. (Sw.)

Locality.—Brazil.

Example, Loemus squamata.

Tichadroma, Ill.

Generic Character.—Bill very long, slightly arched, cylindrical; the base angulated; the tip depressed. Notostrils naked. Feet long and slender. Exterior toe united to the base of the middle; hinder toe with the claw very long. Wings lengthened, broad; the first quill spurious, the second and third, graduated, the three next longest. Tail short, round, broad, and soft. (Sw.)

Locality.—Europe.

Example, Tichadroma muraria. [Creeper.]

Mr. Swainson arranges the Golden-crowned Wrens, or Golden-crowned Wren family, among the Sylviae, in the Prince of Canino and Musignano, in his Birds of Europe and North America, places the genus Troglodytes, of which he records one European and three American species, next to the genus Certhia, in his subfamily Certhinae; and he makes Regulus, of which he notices three European and three American species, the first genus of his subfamily Parvin. Regulus, in the Prince's arrangement, is immediately followed by Parusus.

The Troglodytinae of Mr. G. R. Gray form the seventh and last subfamily of his family Certhidae, and comprises the following genera:


We proceed to illustrate this group by examples of the genera Troglodytes and Regulus.

Troglodytes.

Example, Troglodytes europaeus, Motacilla troglodytes, Linn.

Description.—Male.—Upper parts brown, marked with very narrow transverse stripes, which are disposed on the top of the back; quills marked externally with alternate large and small spots; tail coverts and feathers striped transversely with black; above the eyes a narrow white band; throat and breast greyish buff or white; all the posterior parts brown, marked with white spots and black transverse stripes. Total length within four inches.

Female rather less than the male, with the tints more rusty and the transverse stripes less strongly marked.

This is the Troglodyte, Roylelet, Buef du Dieu, Berichot, and Roy Bertrand of the French; Riedl, Regillo, Rosino, Ipsen, Ienti, Ercolano, R. d'acelli, and Suez-contratte of the Italians; Nelle Konig of Brunnich; Schrenking, Koniker, and Zurchucher of Kramer; Zaun Sanger of Meyer; Haus and Waldaukunigs of Bremh; Vreen, Vran or Ban, Cutty, Katy or Kitty Wren, and others of the British; Drees of the ancient British.


Habits.—This familiar little bird, which has become sacred, like the robin, from the confidence which it shows in courting the neighbourhood of man, creeps about the hedges, making small flights, and in its search for insects generally entering the lower part of the hedge and working upwards. Like the robin, it will sing close to the hedges in mid winter, but the frost and snow are sometimes too much for it, and the little creature perishes with cold, which however it avoids by roosting in warm cattle-sheds, for the sake of the animal heat of the inmates, and in other sheltered places.

The nest is placed variously, according to circumstances.

Linnæus says "significant sub termum," and it has been sometimes found in a bank or old road. The material generally varies with the situation. Thus if the nest be built against the side of a hayrick, hay is used; if against the trunk of a moss-grown tree, that moss is employed. It is large in proportion to the bird, and the shape is generally oval, the top being in the form of a dome and the entrance by a small hole at the side or sometimes at one end. Feathers generally form the lining. Seven, ten, and ten more eggs, white, with a few pale red spots, but sometimes spotless, are here deposited, and about ten days suffice for hatching the brood, sixteen of which is ascertained has been seen in one nest, a large family for the winter, parents to rear. But they are most anxious in collecting food for their young, and when the incubation is at the female sits very close, depending for her sustenance upon the male, who, in constant attendance, feeds insects and worms are their food.

The feathers in a wren's tail make a killing sound in the early part of the season.

In the Portraits d'Oiseaux (1807), the following quaint appears under the cut of this species:

* "Del oiselet, qu'on nomme Royellet, On retrouve l'agile à debat et quyrole. Toujours est plus, tant mache cue bصندل; Et toujours est de, aimant eure senter."

The first lines allude to the old fable of the cock which was supposed to exist between the wren tail and eagle.

The Wren.

Regulus.

Example, Regulus cristatus, Motacilla Regulus, Linn.

Description.—Old Male.—Upper parts of the body of an olive hue, slightly tinged with yellowish; two transverse bands on the wings; faintness on the top of the head long, rather loose, of a bright orange yellow, approaching to a golden colour; on each side of the head a single black band extending to the occiput; face is the base of the bill, region of the eyes, sides of the head, and lower parts ash-coloured, slightly shaded with grey; quills and tail-feathers grey-brown, bordered externally with a colour inclining to olive and internally with whitish; iris deep brown; bill black; feet blackish. Total length about three inches and a half.

In the Female the crest, instead of being orange, that of the male, is of a linen colour; the black band which bars the lateral jaw is less wide, and all the shades of the plumage are less vivid.

In the Young the whole plumage of the crest are grey, approaching to olive; it is only after the first month that the sexes are distinguishable.

Varieties.—Top of the head aureo-blue; a less

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variety has the head and part of the plumage white; but another has the crest of azinotellum, and plumage is more like that of a.

**Geographical Distribution.**—M. Teminick states that this species is sufficiently common in all the countries of Europe up to the Arctic Circle. It is an inhabitant of Russian, Siberia, Sweden, Norway, and Denmark, but from the northern soil. This appears to be a kind of migration to the more temperate parts down to the Mediterranean. It is fairly spread over England, Wales, Scotland, and Ireland, and is found in Orkney and Shetland. It has been received from Siberia, Edwards and Van Reitnagel, and the material of his description has been seen in Japan.

This species is the Rottlet and Rottlet rumpus of the French, and Pennant thinks, with reason in our opinion, that it is the sithe a Sante or Sante of Belon; it is the "Gape rejo de ducelli" of the Italians; "Kongefyl" of the Swedes; "Fugle-Konge" of Brunnich; "Pengelgen" of Walter; Gehörner Sanger, Sommer Zaunkeiln, Nordisches Aufsammungs- und Geographische Verzeichniss, etc.

**Habits, Food, &c.**—This beautiful and active little bird, which I have, so far as I know, never seen in Great Britain, may be looked upon as a very common and frequent visitor among the branches, especially of some fach or fir, running actively along and clearing away the insects. It is far from uncommon round London; and if the observer approach cautiously and stand still, he may watch its motions within a very few feet without disturbing it.

Pennant says that he saw this bird suspended in the air for a considerable time over a bush in flower, singing very melodiously, but with a very weak note, not differing much from that of the Wren, and that the only difference was that a Golden-crowned Wren, which had lost its mate and never found another, continued to sing from May to the end of August. On the contrary, another of the same species, that I possess in my possession, of a fir tree, was heard, never ceasing its notes as soon as the young were hatched. This little family gave Montagu the opportunity of writing one of his most interesting descriptions of the habits of birds:

When first I discovered the nest, I thought it a favourable opportunity to come in and study the interior, and the bird feeding in the next window, and after they became familiar with that situation, the basket was placed within the window, then at the opposite side of the room. It is remarkable that, although the female seemed regardless of danger from her affection for her young, yet the male was as active near the nest as ever. He was placed within the room, and yet would constantly feed them while they remained at the outside of the window; on the contrary, the female would feed them at the table at which I sat, and even while I held the nest in my hand, provided I remained motionless. But on moving any hand over the nest, while she was on the edge of the nest, which I held in my hand, she made a precipitate retreat, mistook the open part of the window, knocked herself against the glass, and lay breathless on the floor for some time. However, recovering little, she made her escape; and in about an hour after I was agreeably surprised by her return, and she would afterwards frequently feed the young while I held the nest in my hand. The male bird constantly attempted to fly from the window, but was always driven back by the female. I continued to watch this bird for some time, and it was afterwards frequently fed, and the nest soon disappeared. The female was very frequently repeated in the space of a minute or a half hour, or, on an average, sixty-three times in an hour; and this continued to last for some time. After the eggs were laid, each young one, each would receive seventy-two feeds in the day; the whole amounting to more than five hundred and seventy-six. From examination of the food, which, by accident, now and then dropped into the nest, I judged from those weighed that each feed was a quarter of a grain upon a medium; so that each young one was supplied with eighteen grains' weight in a day, and as the young birds weighed about seventeen grains at the time they began to perch, they consumed nearly their weight of food in four days at that time. I could always perceive, by the animation of the young perch, when the old one was coming—probably some low note indicated her approach; and, in an instant, every mouth was open to receive the insect morsel. But there appeared no regularity in the supply given by the parent bird; sometimes the same was fed two or three times successively; and I generally observed that the strongest got most, being able to reach furthest, the old one delivering it to the mouth nearest to her; and after each feed she waited a while to see if any mated.

Mr. Yarrell remarks that the nest is placed under a branch of fir, and generally towards the end of the bough being supported by two or three of the laterally diverging and pendent twigs, which are interwoven with the moss of which the outside of the nest is principally composed. This accords with our own general observations; but we have seen the nest, with young in it, in a tall yew hedge. Its most frequent lining consists of feathers. The eggs are pale reddish white.

The out of the 'Santee, of the 'Portraits d'Oyeaux, the 'Rwren, of the 'Rrowsers, the 'P.Article, of the 'Regulus, and of the 'Regulus, are also to be seen in Britain. M. M. T. W. W. Wren, Matthew, Bishop of Ely, was the eldest son of Francis Wren, a merchant in London, where he was born, in the parish of St. Peter's Church, on the 3rd December, 1625. He was admitted of Pembroke Hall, Cambridge, on the 30th June, 1643, and was elected fellow on 8th March, 1644, and took his degree of M.A. on 22d July, 1648. He entered into holy orders in 1610. In 1610 he was presented with the rectory of Teversham in Cambridgeshire. In 1621 he was appointed chaplain to Prince Charles. He attended the prince in his "strange journey into Spain" in 1629, and having thus had opportunities possessed by scarcely any other churchman of ascertaining the opinions and feelings of him who was afterwards to be king, he acquired an influence with the clergy, which made him aware of the main causes of the calamities which soon afterwards
in 1629 he was made dean of Windsor and Wolverhampton, and in 1629 one of the judges of the Mar-1 Chamber. He attended Charles I. on his visit to Scotland in 1633, but failed to sound the religious feelings of the country so candidly as he always and did those of his royal master. In the following year he was made bishop of Hereford, and translated on 5th December, 1630, to Norwich, and on 5th May, 1638, to Ely. He was employed in the construction of the Scottish House of Lords, and in the reading of the Baptist Church at Eding. 1637 occasioned those riots which were followed by the submission of the Covenant, and finally led to the great civil war. On the 19th December, 1640, Hampden was sent by the Commons on a message to the Lords to accept the measures proposed for the improvement of the laws. At the "high nature" against Wren, "concerning the setting up of idolatry and superstition in divers places, and exercising some acts of it in his own person, with divers other matters of great importance, and that they have information likewise that he endeavours an escape." An answer was returned, that he had been ordered to find bail in 10,000l. to attend the judgment of parliament. According to a paper preserved in the "Parentalia" of his nephew, the number of persons against him related to such charges as the raising of the altar, kneeling at the sacrament, and other matters of ceremony, which afterwards became part of the uniform observance of the church of England. There is no doubt however, that the real ground of the charge against him was the despotism of his own views in clerical matters, for Clarendon, who praises his learning, says he was a man of severe sour nature, and charges him with having so vexatiously enforced the discipline of the church of England, public and private, on persons of the clergy, and others, as to drive many of them from his diocese. The articles of impeachment were not pursued, but he remained a prisoner in the Tower till the restoration of 1660, when he was released in his see. He framed the forms of government of the 20th of May, 1660, the year of the Restoration. He died on the 24th April, 1667. He built the chapel at Pembroke Hall, Cambridge, of which his nephew Sir Christopher Wren was the architect. Of a few controversial pamphlets which he left behind him, the titles will be found at length in the "Bibliography Britannica."

WRKN, MATTHEW, eldest son of Bishop Wren, was born at Cambridge, in 1629. He was for some time a member of parliament. He is also secret to the bishop of Clarendon, and afterwards to the duke of York. He died in 1672. Matthew Wren was the author of "Considerations on Mr. Harrington's Commonwealth of Oceana, restrained to the first part of the Preliminary; London, 1658."

WRKN, SIR CHRISTOPHER, born at East Knoyle, Wilts, October 30th, 1632, was of good family, being the son of Dr. Christopher Wren, chaplain in ordinary to Charles I., and dean of Windsor, and nephew to Dr. Thew Wren, successively bishop of Hereford, Norwich, and Nly; and from the former of these he seems to have inherited a taste for scientific and literary studies, that of his brother and nephew for the State of the Monarchical and Popular Government; in the "Vindication of the Considerations upon Mr. Harrington's Oceana; Oxford, 1689. 8vo.; London, 1890. 8vo.; On the Origin and Progress of the Revolutions in England," in Gutch's "Collected Oration, vol. i., 1791."

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Yet so far this was mere fancy being adopted, that it was last sight of all together in rebuilding the city: the new streets rose up in their space and intricate maze of narrow lanes which are now but also the road that has been improved: so, of all, instead of the line of streets seen along the Thames, which Wren proposed, the river is entirely shut out from view by wharfs and walls, now in much space as to other scheme for improving the banks. It is not indeed to be wondered at that much such a scene of confusion, and under the pressure of a necessitate, that nothing should have been more to the mind of that they did not inconvenience, still it is to be wished for commodiousness in the first instance, and for embellishment to grow up
The composition is compact and simple, forming a single general octagonal mass, surmounted by a cupola, and extended on its west side by a portico, and a short nave or vestibule within; and there is also a great deal of play produced by the alternate curved sides of the main body. Of this design one great recommendation insisted upon by Wren was that there would be only a single order; yet though this is true as regards avoiding superelevation or order over order, there would in fact have been two orders (both Corinthian), the larger one for the portico or vestibule, and one upon a smaller scale (but raised to the same level of entablature, by being placed on a lofty stylobate) in the side elevations, which would have been surmounted only by an attic and balustrade. Such a combination of two minories might perhaps have been objected to by some as rather licentious, notwithstanding that there is ample authority for it in the works of Palladio and others of the Italian school; but it would at all events have produced picturesque variety, and the larger order of the portico would have been impeding by contrast with the other. It is further to be observed that that ordinance is kept distinct from the other by being confined to a separate elevation of the building. As to the interior, the parts are beautifully grouped together, so as to produce at once both a regularity and nicety, yet it does not seem by any means particularly well adapted for the Protestant service, there being no space for a collected congregation, except in the circular area beneath the dome, which could not be fitted up for such purpose without being further included; whereas also in other respects the grandeur of the ensemble, as it shows itself in the plan, would have been greatly impaired.

The composition of that first idea with the one afterwards adopted makes evident almost opposite modes of treatment both as to arrangement and proportions. While the first exhibits concentration and uniform spaciousness, the other is more extended as to length, but contracted in other respects, and the diagonal vistas that would have been obtained in the other case are altogether lost. It may be observed too that the nave, or western arm of the cross, is rendered apparently shorter than the eastern one, externally, being broken so as to form a second or western transept.

The first stone of the present edifice was laid June 21, 1673; the choir was opened for divine service in December, 1677, and the whole was completed in thirty-five years, the last stone on the summit of the lantern being laid by the architect's son Christopher in 1710. Taken altogether, the present St. Paul's is a truly glorious work—its cupola matchless in beauty; yet all noble as it is, the fabric will not bear to be rigidly scrutinized in the spirit of capricious criticism; and of late years no little of such criticism has been brought to bear against it. Among other faults, it is alleged that its real form and construction are masked, the upper order of the side elevations being merely a screen concealing the buttresses and clerestory windows of the nave; also that the same is in a great measure the case with the cupola, the external dome being considerably lovelier than the inner one, being so elevated chiefly for effect—True; and that effect is most admirably accomplished. The last reproach is all the more insidious, because it has, if not proceeded from, been repeated by those who, while they constrain St. Paul's dome as being larger than the interior actually required, not only tolerate but are in ecstasy with a Gothic spire—a feature built altogether for external effect, and quite useless as regards the interior of the structure, otherwise than as giving stability to the tower. Another charge which has now started up against Wren is that he was either ignorant or grossly
Wren was possessed of the office of surveyor-general (which he had held for forty-nine years), very little to the credit of George I., and to the disgrace of one of the most fortunate men who has ever succeeded him in that capacity has preserved a name from oblivion by perpetuating it for lasting shame and contempt. To Wren himself however the discharge from office must have been rather a wholesome release, and, verging towards old age, he could then have little further worldly ambition, even had he already amply gratified it. The close of his life was so much to be pitied as to be envied, for if he passed the last five years of his existence in retirement and in comparative poverty, there is yet no one of the unnumbered host of minié placid content. The struggles of dissolution were sent him, for without any previous symptoms of approaching death he was found dead, reposing in his chair after one (Fitch's) of his last recorded acts of architecture. He received the tardy honour of a splendid funeral at St. Paul's, where his remains were deposited in the Crypt, with no other adornment to his tomb than the inscription on it, with the sublime eloquence of genius:

"A Monument for Wren."

Christopher, the architect's son by his first marriage, and who sat in parliament for Windsor about 1706—author of a work entitled "Numismata Antiqua," 4to, 1708; and he composed the chief part of the "History of the Royal Family," 2 vols., 1709—died February 12, 1743. A memorial tablet was erected in the church of Windsor, in the fifty-first year of his age.

Chronological List.

1663 Pembroke College Chapel, Cambridge.
1664-9 Sheldonian Theatre, Oxford.
1664 Buildings at Trinity College, Cambridge.
1665-6 Temple Bar.
1667 Royal Exchange, London.
1668-77 Emmanuel College Chapel, Cambri.
1668 Custom-house, London.
1670 Temple Bar.
1671 Temple Church, London (202 feet high).
1670-4 St. Sepulchre's, Newgate.
1671-7 St. Mary-le-Bow.
1671-86 St. Lawrence, Jewry.
1672 St. Stephen's, Walbrook.
1672 St. Paul's, London.
1672 St. Mary-at-Hill.
1673 St. Benet Fink, Threadneedle Street, now taken down.
1674-4 College of Physicians, Warwick Lane (converted into market).
1675 St. Paul's begun.
1675 Royal Observatory, Greenwich.
1680 St. Bride's, Fleet Street.
1680 St. Swithin's, London.
1681-2 Gateway Tower, Christ Church, Oxford.
1682-90 Chelsea Hospital.
1682 St. Anthonie's, Watling Street.
1683 The Palace at Winchester, which was left unfinished, and now converted into a house of Wine.
1683 Queen's College Chapel, Oxford.
1683 St. James's, Westminster.
1683-5 St. Clement's, Eastcheap.
WRESTLING affords so obvious a means of trying the bodily strength and activity of men, that it has probably formed one of the athletic exercises of almost every nation, at least of every warlike nation. It was in use among the Greeks from the earliest times. Perhaps the oldest description of a wrestling-match is that given in Homer in the ' Iliad' (xxxi., 700, &c.). This contest was one of the great games which Achilles provided to dignify the funeral of his friend Patroclus. The wrestlers were Ajax and Antilochus, at St. Edmund's, London ('for the victor was a tripod, valued at twelve oxen; the compensation to the vanquished for his toil was a female slave, valued at four oxen. The wrestlers were naked, except a girdle round the loins. Having walked into the centre of the ring, they laid hold of each other's arms and strong hands; and their efforts to throw each other down were such, that, as Homer describes it, their backs creaked, the perspiration flowed from them, and many jolts, red with blood, they exchanged. It seems that the actual struggle was continued so long that the spectators became weary, and Ajax then proposed to Ulysses that the one should try to lift the other. Ajax immediately lifted Ulysses, who, with his usual skill, struck his bullying opponent with his first blow, and sent him down on his head. The porter of Ajax, thrown off his balance, fell on his back, with Ulysses on his breast. If it had been the Cumberland game, Ulysses would have been declared the victor, but the Greek contest, which was a terrible trial of strength and not at all a sport, the power of the body being then brought into action to obtain the most advantageous grasp of each other, and displaying in their preparatory movements, as well as in the subsequent struggle, a series of beautiful attitudes. They are represented on ancient monuments in every variety of position, sometimes grasping each other by the wrists, sometimes round the shoulders, and sometimes the one has seized the other round the loins, and has lifted him up with his head downwards. This mode of wrestling was not purchased; women were not permitted to wrestle; but there was another kind, which was indeed occasionally the concluding part of the erect wrestle, called ἀνάκολονάθες, in which they struggled on the ground; this was always a cruel contest, sometimes accompanied with biting and similar maltreatment. When one of the combatants yielded, or was quite exhausted, or actually strangled.

The πίλαγχος (wrestling) was also combined with the πηγή (boxing), and this alternate game was called πηγαδιστέων (πήγας, 'all' or 'every,' and ἐπιθέω, 'force' or 'strength'); every blow given to each other's limbs was considered a point. The five principal exercises of the Greeks were also combined into one game, which was called πηγαδομα: in this game all the exercises were performed by the same persons in the same day; and the five exercises were (1) leaping (ἀναπηγα), throwing the discus (ἰππασσεμέν), throwing the spear (δισφόνος), and wrestling (πίλαγχος).

The Roman wrestling was an imitation of the later forms of Greek wrestling, without any points of difference deserving of notice.

'Merry England,' of the old time abounded in bodily exercises of many kinds, and wrestling was one among them which was practised in all parts of the country. Except in the north, the game seems to have been generally similar to the Cornish game as still in use. In the common game, the hold was taken by the collar and waistbands in the Priam game, the Phoebus, or one hand on the waist, and each had a girdle, something like aawl, one shoulder and under the other, for his opponent to take hold of. A ram was one of the most common prizes. In this Prologue to Chaucer's 'Canterbury Tales,' we are told of the Miller that

As wrestling he would have away the ram.'

But, according to the old poet called 'A Lytel Geste of Robyn Hode,' prizes of greater value and dignity were sometimes given—a white bull, a great coursier, with saddle and bridle, a pipe of wine, and a red gold ring.

In old times the Londoners were distinguished for their skill in wrestling. Matthew Paris, in 'Hist. Ang,' anno 1222, says that they held their anniversary meeting for this game, in the 6th year of Henry III., near the hospital of Westminster, and the place was met by the inhabitants of the city of Westminster and suburbs. The prize was a ram, and the Londoners, having been victorious, accepted a challenge to meet their opponents in Westminster; they did meet them, and the result was a quarrel, a fight; and the monument of Stow mentions another tumult at a wrestling-match near Clerkenwell in 1433. Wrestling had fallen much into disuse in Stow's time. 'In the month of August,' says Bartholomew the apostle, 'before the Lord Mayor, aldermen, and citizens, placed in a large tent near unto Clerkenwell, of old time were divers days spent in the pastime of wrestling, where the officers of the city, namely, the sheriffs, serjeants, and the king's bench, and weigh-house (now so many men), and others of the city, were challengeers of all men in the suburbs, to wrestle for games appointed; and on other days before the Lord Mayor, aldermen, and sheriffs, in Penfurbie Field, to shoot the standard, broad arrow, and flint, for gammon; but now, of late years, the wrestling is only practised at Bartholomew's day in the afternoon, and the shooting, some three or four days after, in one afternoon, and no more.'

Wrestling is not much practised in England at the present time, except in the north, especially in Cumberland and Westmorland, and the south-west, in Cornwall and Devonshire. The Cornwall and Cumberland wrestling are distinct games, and are performed in quite a different manner.

In a Cornwall prize-game the wrestlers wear a strong jacket, which seems to have superseded the old girdle round the shoulders, and is used for the same purpose. They generally take hold, not deliberately but by a catch, mostly aiming to seize the jacket with one hand as far as possible behind the shoulder, while with the other hand they endeavour to grasp the sleeve of the opposite arm about the wrist or elbow. The shoulder-hold is mostly retained, if possible, but the other is shifted when in the course of the struggle the opportunity presents itself of passing the arm round the loins, so as to give what is called a Cornish hug, or in any other way which offers an advantage. A powerful wrestler, when he gets an extra hold, sometimes pull his opponent, head foremost, and heels up, over his shoulder. The most objectionable part of the Cornish game, as sometimes practised in London, though, we believe, it is not common in Cornwall or Devonshire, is that of wearing heavy shoes, and kicking each other's elbows in; though the front of the leg is defended by a strong piece of leather, the blood is made to flow abundantly. Those who wish for a more detailed account of the Cornish wrestling may consult 'Partenopara: the Inn-Play, or Cornish-Hug, a Hudsonian method which comprehends the passes, and brake all Holds, and throw most Falls mathematically;' by Sir Thomas Parkyns, of Bunny, Barretom, 'Nottingham, 1717, 2nd ed., 10o. Prefixed are 'Institutes for Young Wrestlers, by William Tomastall.'

The Cumberland wrestling is essentially distinguished from that of Cornwall by the manner of taking hold and by the settled rules of the game. In a prize game the
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wrestlers advance into the centre of the ring, shake hands, throw off coat, waistcoat, and shoes, and then proceed to take hold, which is done by each passing the left arm over the right shoulder of his opponent, the right arm under the left arm, and grasping the wrist behind the back. In doing this there is an obvious advantage in taking hold as low as possible on the back. If one of them has got such an unfair advantage, by a 'snap,' or sudden catch, the other immediately unlooses his hands, and the hold must be taken anew; nor does the wrestling commence till each is satisfied that the hold of his opponent is not likely to be broken. The wrestlers put in practice some of the numerous feats and trips of which every first-rate wrestler has some almost peculiar to himself. The wrestling is on the green sod, and is, for the most part, perfectly harmless, and seldom of long duration, though the struggle is exceedingly severe while it lasts. If one throws the other on his back, he is the winner, whether he stands or is pulled down by the loser upon himself. He who is thrown is technically said to be 'grassed.' If they come to the ground side by side, the fall is not fair, since they are over against each other; passing into succession till all have wrestled once, when the winners wrestle again, and the losers retire till only a single pair remain, who are generally the most powerful and skilful of all, and then the fast and most skilful man is the winner; he who is in possession of the first prize. A great many Cumberland wrestling-match brings together nearly all the best wrestlers from every part of Cumberland and from many parts of Westmoreland. The largest and most powerful men enter the ring; for all weights, the smaller and lighter men wrestle in the ring for weight, for whom separate prizes are assigned. A wrestler who intends to contend for the chief prizes puts himself through a course of training for weeks previously, as if he were preparing for a long battle. Till his mind is so thoroughly prepared, wrestling is practised, with little variation, throughout the lowlands of Scotland, as well as in Northumberland and Durham.

The other favourite games of the Cumberland and Westmoreland men are leaping and running: these two games generally accompany the wrestling as prize games, in which the best wrestlers frequently contend, as well as others. In running perhaps the inhabitants of other parts of England may equal them; but in leaping—high leap, standing-jump, running-jump, and hop-step-and-jump—they are probably unrivalled.

A prize-game of Cumberland wrestling is held every year in London: many of the wrestlers are life-guardians. Frequently spirits are given them. Broth is a native wrestling, very fine, and very skilful. It is also held in London and Westminster. (Dictionary of Greek and Roman Antiquities; Potter's Grecian Antiquities; Strutt's Sports and Pastimes, by Horse; Stowe's Survey of London.)

WRIGHT, EDWARD, a mathematician, the account of whose life and writings is generally so loosely given that it will be worth while to devote a little more space to him than his celebrity would otherwise demand. He was born at Garveston in Norfolk, but the date is not known. He was educated at Caius College, Cambridge, of which he became a fellow. Dr. Hutton (in the preface to his logarithms) quotes a translation of what he calls 'a Latin piece taken out of the annals of Caius College, Cambridge,' in which it is said that Wright was 'learned in knowledge, and was most expert in the making of instruments: that he was the first inventor of the plan of bringing water from Ware to London (in what is now called the New River), but that he was prevented by trickery from bringing it into actual execution. It is also related by Burne, who gives some account of him in the list at the end of the translation of Manlius, that Wright was mathematical tutor to Prince Henry, son of James I, and that he was the first prince he caused to be made in Germany a sphere which had not been made before, as if the moment of the system, but would suffice to foretell eclipses for 17,000 years. This sphere was damaged in the civil troubles, but was recovered and repaired by Sir Jonas Moore in 1640, and is still preserved at Caius College, Cambridge.) 1673, says that it was then at Sir Jonas Moore's official residence in the Tower. But Wright's fame rests entirely upon his discovery of the mode of constructing the sea-chart which is now in universal use under the name of Mercator's Projection. When sea-charts were first made, the degrees of latitude were made of equal length; in fact the chart was nothing more than a map in which degrees of latitude and longitude were represented by rectangular parts throughout. In such a chart attempts were made to navigate by following the course marked out by a line on the map joining the port of departure with that of destination, and the error was considerable. Mercator (Mercator, Gerhard) as early as 1569 first ventured the idea that degrees of latitude ought to increase in length; and this was afterwards found out. Mercator accordingly constructed rough charts probably by transferring ruler lines from the globe to the chart, making them straight in the latter, in which the degrees of latitude increase, and in such a table the proper and the: but there is no sufficient reason to suppose that he had the least idea of doing more than that or that he had investigated the mathematical problem of laying down the sphere on a plane as that the ruler lines should be straightened. But it is absurd, in the worst sense of the word, to expect writers to originate or to cite ideas from Wright, since the maps of the former were published perhaps before the birth of the latter, certainly thirty years before he published anything on navigation. And for this single reason it is not, perhaps, as might have been expected, 'By occasion of these maps of Mercator, I first thought of correcting so many and such gross errors, &c.' All that could have been learned by Mercator's hint, Wright did learn: it must first be shown that he had the idea before it can be suspected that the latter copied it.

To instruct himself in practical navigation, Wright went to sea in 1658, on a voyage to the Azores, with George Earl of Cumberland, a dispensation from residence in England having been given him on this occasion. He had not been long flourishing in Britain: a few years before Wright, many captains mocked them that read charts or cross-staves, saying they cared not for the sheep-skinnes, they could keep a better account of the wind and weather. Then them that observed sun-shines for finding the latitude, they would call sun-shooters and star-shooters and ask if they had hit it. In this voyage Wright made many observations, and perhaps thought of his method of drawing the chart. Nothing of this however was published until 1654, when Blundell, in the second edition of his 'Exercises,' gave the mode of constructing the chart and the following account of it: 'Mercator hath, in his universal card or map, made the spaces of the parallels of latitude in a straight line as also held in London. If one should be made to go north or south, the former part would be a straight line and the latter part a series of curves. This would require a very accurate chart. If he had the power of the large share of credit. He had a full and geometrical power over his subject; nought but the differential calculus could have given him his power. He knew well that the infinitely small increments of the latitude and the longitude, and the corresponding parts of the chart, are in small circles and squares. He knew that one of the charts was the meridian circle, and thence formed his celebrated table by the sums of the meridians, expressing that it would be made more exact the
smaller the interval of the angles of those sects is made.

Had those who have written about him studied his work, the 'geometrical conceit' which he gives for dividing the meridian would have become a common and well-known illustration, and would have appeared in collections of examples, as in Dr. Guettard's translation of his Rationale, which is not completely as there was nothing empirical about his table. 'Let the meridian route upon a straight line beginning at the equinoctial, the globe swelling in the meantime in such sort that the semidiameter thereof may be represented by several other beautiful and perspicuous tables. The angle between the equinoctial and semidiameter intersecting at night angles upon the foresaid straight line: The degrees, minutes, seconds, &c. of the meridian, in the straight line, as they come to touch the same, are the divisions of the meridian. The effect of dividing the meridian of the nautical planisphere may satisfy the curious exactness of the Geometrician; but for mechanical use, the table before mentioned (which seems to follow) may suffice.' The result of the integral calculus, namely, that the sums of the sectants in Wright's table are ultimately proportional to the logarithmic cotangents of the semi-complements of the latitudes, was first announced by Henry Bond in Norwood's 'Epistola de magnis aequilibus descriptis,' 1651; and a more extended elaboration of the subject appeared in Gunter, 1665. It was first demonstrated by James Gregory, in his 'Exercitationes Geometricae,' 1668, and afterwards by Halley. (Phil. Trans., 1695; see also the 'Miscellanea Curiosa.')

On the invention of logarithms became public, Wright immediately applied himself to the study of the new method, and translated Napier's description of his canon. This translation was forwarded to Napier at Edinburgh, received his approbation and a few lines of addition, and was published in 1616 by the son, Samuel Wright, also of Calus College, with a preface. The migration of the books from England, and, for some time, the lack of the scholar a nation of 50,000, in philosophical transactions, and to the transactions of the Linnean Society. This genus was formed by Robert Brown, and has been divided into two, a salver-shaped corolla with the throat crowned by ten divided scales; the stamens extended, attached to the throat of the corolla, and the anthers sagittal, cohering by their middle to the stigma; the ovaries two, cohering; the style single, filiform, dilated at the top; scales five in the corolla. The petals have the calyx outside the corolla; the follicles distinct or combined with adnate placenta. All the species erect shrubs or small trees, with opposite leaves, and corollas of mostly white flowers. The petals have no stamens, the corolla is a little more than half the length of the throat, and the tubes of the corolla six times longer than the calyx. This plant is a native of Ceylon, and has sweet-scented flowers with a form resembling those of the Jasmine. The wood is white, of a fine grain, and susceptible of polish, and is used by the cabinet-maker. The bark of this shrub, which goes by the name of Compos, bark in Great Britain, and Palapatta in India, is asserted to be a specific in dysentery and of use in most disorders of the bowels. Its milky juice is also used as a vermifuge.

W. antisydenticus has obovate, oblong, acuminate, glabrous leaves, nearly terminal corollas, the follicles distinct, and the tube of the corolla six times longer than the calyx. This plant is a native of Ceylon, and has sweet-scented flowers with a form resembling those of the Jasmine. The wood is white, of a fine grain, and susceptible of polish, and is used by the cabinet-maker. The bark of this shrub, which goes by the name of Compos, bark in Great Britain, and Palapatta in India, is asserted to be a specific in dysentery and of use in most disorders of the bowels. Its milky juice is also used as a vermifuge.

W. cocinea, Scarlet Wrightia, has almost sessile ovoid-oblong leaves; the flowers three or four together, terminal; the corona in the throat 6-lobed; the lobes crenulated; the follicles distinct and rough; the tube of the corolla 6 times longer than the calyx. It has large flowers of a dull red colour with a scarlet corona. It is a large tree, and its wood is remarkably light and firm, and much used by turners, and also for making palankeens. It is also useful in making handsome exhalations; small terminal corollas; the tube of the corolla longer than the calyx; the corona fleshy, inclosed in obtuse segments, the follicles scarous and distinct. This plant is a tree, and is a native of the Ceylons.
wounded a yellow juice flows from this plant, which mixed
with water will dye clothes dipped into it of a yellow
colour. \textit{W. tinctoria}, as its name indicates, is used for
the purpose of dyeing of a blue colour, and is employed as a
substitute for indigo.

The \textit{Nerium pascidium} of Roxburgh is placed by Don
in the genus Wrightia. It has oblong acuminated shining
leaves; terminal bracteated pedicels shorter than the
leaves; the tube of the corolla longer than the calyx; the
corona of five bifid villous segments; the follicles swollen,
oblung, obtuse. The seeds of this plant are furnished with
broad membranous edges. It is a native of Silhet, where it
is in common cultivation. The bark is distinguished by
anod of a woody fibre, which, being easily separable, is used by
the natives as a substitute for hemp, and is cultivated for
this purpose. Dr. Roxburgh found, on steeping the roots
in a fish-pond for the purpose of more easily separating the
fibres of the bark, that many of the fish were killed. From
this circumstance he gave it its specific name.

There are other species of Wrightia, most of which pos-
sess properties resembling those described, and, with the
exception of \textit{W. indigotica}, which is a native of New
Holland and Java, they are all natives of the East Indies.

(Don's Miller; Lindley, \textit{Natural System}.)

WRINGTON. [SOMERSETSHIRE.]

WROTHLESLEY, THOMAS, the fourth earl of South-
ampton, was the son of the earl of Southampton who
was engaged in Lord Essex's conspiracy in the reign of
Elizabeth, and the great-grandson of the first earl of
Southampton, Henry VIII.'s lord chancellor, was one of
the most distinguished as well as zealous and constant
supporters of his party after Charles I., after the breaking
out of the civil war, until that king's death, and having transferred
his devotion to the son, and rendered important services
to Charles II. while in exile, was after the Restoration ap-
pointed lord high treasurer, and was, next to Lord South-
ampton, one of the chief stay of the restored government until his
death in 1667.

Lord Southampton, as a member of the House of Peers, was an
early member of the first proceedings of the Long Parliament,
and during its sitting in 1640 was accused of being a
royalist; but left the popular party, as did his friend through
life, Lord Clarendon, at that time Mr. Hyde, in the course of
the proceedings for attainting Lord Strafford. The
connection between the father of Lord Southampton and the
father of Lord Essex, the parliamentary commander-in-
chief at the commencement of the civil war, has led Lord
Clarendon to trace, in his eloquent sketch of Lord South-
ampton's career and character, the early agreement and
subsequent separation between the sons. 'The great
friendship between his father's houses made many believe
that there was a confidence between the earl of
Essex and his; which was true to that degree as could be
between men of so different natures and understandings.
And, in truth, if his boylike policy in the year 1642, when
they appeared both unsatisfied with the prudence and
politics of the court, and were not reserved in declaring it,
when the great officers were called in question for great
transgressions in their several administrations.' And then
after speaking of Lord Southampton's opposition to the bill
of attainder against Lord Strafford, he proceeds— From
this time he and the earl of Essex were perfectly divided and
separated, and seldom afterwards convened in the same
opinion; but as he worthy and bravely stood in the grasp
of the influence of the Straffords in life, so he did afterwards oppose all those invasions, which
were every day made by the House of Commons upon the
rights of the crown or the privileges of the peers, which
the lords were willing to sacrifice to the useful humour of the
other. \cite[II. iii. 228.]} When the king and parliament
took up arms against another, Lord Southampton zealously joined the king, by whom he was made a
member of his privy council and a gentleman of his bedchamber.
He was one of the king's commissioners to treat for peace
at Uxbridge, in 1645; and Lord Clarendon gives the fol-
lowing account of the zeal which he showed on this occa-
sion:— He was naturally lazy, and indulged overmuch
himself; yet as no man had a quicker apprehen-
sion or severer judgment in these kinds, since
then he had a hopeful prospect, no man could keep his mind
longer bent, and take more pains in it. In the treaty at
Uxbridge, which was a continued fatigue of twenty days,
he never slept four hours in a night, who had never used to
allow himself less than ten, and at the end of the
year was much more vigorous than in the beginning, who
made the chancellor to tell the king when they returned
from Oxford, that if he would have the end of Southam-
pton's life in good health and good humour, he must give him
store of business to do.' After the king's death, was
encompassed with the ruling powers and resolved in England
at his estate near Southampton, and assisted the
his late master, according both to Clarendon and Knox
with liberal supplies of money. In the letters pressetween Clarendon and the royalists in England were
discovered before the Restoration, there are several proofs
of the secret co-operation. 'I do not undervalue any man,'
Clarendon says, 'as I did in one of these letters, when I say that
Southampton is as wise a man as any the nation has,
most as of honour superior to any temptation. I do not
need to desire you to communicate any things freely.'

('Clarendon State Papers,' iii. 750.)

Immediately upon Charles II.'s return to England the
he stayed for two days at Canterbury on his way
to London, Lord Southampton was made a member
of his privy council; and before the end of the year
was made lord high treasurer. Lord Southampron's
character for judgment and integrity gave a better
administration. Ill health and the natural indis-
 Cheny of his health (as his letters sometimes
speak of) urged him to retire. He was made chancel-
or of the House of Lords, but in the hands of the
secretary, Sir Philip Wi-

wick. In the council he at first strongly advised the
king for a larger fixed revenue than that which
was granted by the convention parliament, and urged
that an act should be passed for
the matter settled; and in the House of Lords he
himself was more disposed to toleration of the Protestant
souls (as he called them) than his friend and colleague Lord Clarendon. He
died at 3 o'clock in the evening of 18 May, 1667, of
consumption, and had long
enjoyed great sufferings in the last years before his
death. Mr. Pepys has the following entry in his diary, dat-
ed two after his death: 'Great talk of the good end
Lord Treasurer made; closing his own eyes, and seeing
dawn, and peace, and liberty, and freedom in the
world: and is said to die with
the cleanest hands that ever any lord treasurer did.'

('Diary,' iii. 222.)

Bishop Burnet has drawn in the following sketch of a
minister, whose innocence in an age of compo-
the chief title to be remembered. 'He was a man of
virtue and of very good parts. He had a lively appre-
sition and a good judgment. He had merited much by
constancy and adherence to the king's interest during
his personal danger, and the charge of his large annual
munificent and extensive gifts only one in the year during his
exile; for he had a great estate, and only
his daughters to inherit it. He was lord treasurer, but
he was a man of the greatest secrecy about business, and
grew very uneasy, and kept himself a
of the way that was consistent with his high
position. He was a man of
spiritual gifts and religious
taste, and his name was long remembered. He was the
child of a man of a great name, and an allow-
c for a table; but he gave, or rather sold, all the sitting
places, and made great profits out of the estate of
crown; but now, that estate being gone, he left
Southampton dissembling to sell places, and began to
be contented, and the lord treasurer to have 8000 a
year, and the king to name all the salaried officers
continued to be so all his time; but that since the
death of lord treasurer has both the 8000l. and a main house
near Richmond.'

('History of His Own Tie,' Vol. i. 175 ed. 1833.)

Lord Southampton was married three times: first, RACHEL, daughter of Daniel, baron de Roffigny, a
to the daughter of Henry, who was created William, viscount Gainsborough, 6th Viscount Pelham and
Francis, lord Dunsmore, afterwards earl of Chichester.
thirdly, to Frances, daughter of William, duke of Squat-
set, and widow of Richard, viscount Moineux.

('Extinct Peerage,' iii. 671.)
WRIST. [Articulation; skeleton.]

WRIT, a law term, which, in its proper and more extensive signification, implies a writing under the king's seal, whereby he confers some right or privilege, or commands some act to be done. Writs are either patent (open, commonly called letters patent, litorer patentes) which are not sealed up but have the great seal attached to them; or close (littera close), which are, or are supposed to be, no more than little letters written to the party: they are subdivided into the following classes and subdivisions:—

1. The writs issued to the plaintiff are either to have the effect of an ordinary suit, or to suspend, prevent, or restrain the defendant from doing anything; and the former are again subdivided into the following classes:

(a) The writs of remedy, which are used to give redress for a wrong done to a person, or to the estate, of the plaintiff; such as damages for an injury done to the person or estate of the plaintiff, or to prevent the defendant from doing anything which would be prejudicial to the plaintiff.

(b) The writs of mandate, which are used to compel the defendant to do some act, such as the delivery of property, or the performance of some duty, or the payment of money. These are subdivided into several classes:

(i) The writs of mandate, which are used to compel the defendant to do some act, such as the delivery of property, or the performance of some duty, or the payment of money.

(ii) The writs of prohibition, which are used to prevent the defendant from doing an act, such as the performance of a duty, or the giving of a certificate, or the payment of money.

(c) The writs of certiorari, which are used to责令 the defendant to render an account of his acts, or to give an answer to a question, or to render a return of a document, or to give a certificate.

2. The writs issued to the defendant are either to have the effect of an ordinary suit, or to restrain the plaintiff from doing anything; and the former are again subdivided into the following classes:

(a) The writs of discovery, which are used to compel the plaintiff to produce certain documents, or to give an answer to a question, or to render a return of a document.

(b) The writs of replevin, which are used to restrain the plaintiff from doing anything, such as the delivery of property, or the payment of money.

3. The writs issued to the court are either to have the effect of an ordinary suit, or to restrain the defendant from doing anything; and the former are again subdivided into the following classes:

(a) The writs of mandamus, which are used to compel the court to do some act, such as the delivery of property, or the performance of some duty, or the payment of money.

(b) The writs of scopo, which are used to restrain the court from doing any act, such as the performance of a duty, or the giving of a certificate, or the payment of money.

(c) The writs of admissio, which are used to admit the plaintiff to the court, or to give him a certificate, or to render a return of a document.

(d) The writs of digestion, which are used to direct the court to render an account of its acts, or to give an answer to a question, or to render a return of a document.

WRIT OF TRIAL. All trials of causes in the superior courts took place formerly either at bar before the whole court, or at nisi prius before one of the judges of the court, or at nisi prius in the counties, before the deputy or the judge, as the case might require. But now, by the 3 and 4 W. IV., c. 42, s. 17, in any action depending in any of the superior courts for any debt or demand in which the sum sought to be recovered is £10 or less, the cause may, by the party desiring it, be directed to be tried by the sheriff of the county where the action is brought, or by some other officer, the same as if it were a petit jo, and the judgment of the sheriff, or of the judge, as the case may be, shall be final. But in all other cases, the superior court may, upon the application of the plaintiff, order the cause to be tried by the court, or by a judge, if satisfied that the trial will not involve any difficult question of law or fact, or that the cause is not of the kind or subject matter to which this mode of trial is applicable. The statute applies only to actions for a debt or demand in a debt or demand of £10 or less, and only to those cases where the action is brought in the county, or in the county where the defendant resides, or in the county where the cause of action arose. The sheriff, usually take place before his under sheriff or other his deputy; and they are conducted in the same manner as at nisi prius; and the court will take place at the same term of court, unless the judge of the court directs otherwise. But if the trial has been before one of the superior judges; but a new trial will not be granted upon the ground that the verdict is against the evidence, where the amount of such verdict is less than £10, unless such verdict be manifestly perverse.

WRITER, in Scotland, is a term of nearly the same meaning as attorney in England, and is generally applied to all legal practitioners who do not belong to the bar, although it has of late become customary to substitute for it the term solicitor. As special exceptions, the body of Mandamus, and Quo Warranto, and Prohibition, are the specimens of the privileges of conducting cases before the Court of Session, the Court of Justiciary, &c., are called solicitors of supreme courts (abbreviated S. C.). The practical point is, that the court of Appeal in Scotland, as the highest court of appeal in the country, is generally a society of writers privileged to practice in the sheriff court and in all the local courts, and to conduct their own by-laws, and to regulate the terms of admission for their conduct to the local judges before whom they practice, and as bodies they are, on the one hand, protected from the infringement of their privileges by unlicensed persons, and, on the other, liable to discipline for misconduct, and for the use of admission to their practice.

WRITER TO THE SIGNET, abbreviated W. S., is the designation of the members of the most numerous and
WRAY.

WRY. 

In literature, the name of a large number of species, but the genus

WRAYNECK. Xancus torquilla. Linn.

General Character.—Bill short, straight, deeply cleft. Mantle bluish, naked, partly closed by a membrane. Tongue long, wiry, and serrated. Wings moderate, second quill longest. Tail feathers forked. Feet with two anterior toes joined together, and two behind unconnected.

Description of Xancus torquilla.—Male.—Ground-color light, with the image of the throat and neck, a large brown streak extending from the occiput to behind the ear. The upper parts are strongly shaded with brown, the back and tail are of this color. The sides of the body have a more decided, the breast and front of the neck pale rusty, with transverse black lines; bill and feet olive-brown, pale hazed or yellow-brown. Total length seven inches.

Female with the tints less vivid, the band on the tail of the male, and on the back not so long as in the male.

Varieties.—Pure white. Yellowish white. Geographical Distribution.—Denmark, Sweden, Norway, Germany, where it is rare; France, Spain, and Italy (summer); England, Wales, and S. France. It is sometimes met with in the last and in the north of the breed. Not recorded in Ireland. Kamtschatka, Illustra, Himalaya Mountains. Winter residences, N. America and warm parts of Western Asia.

This is the true Juncus, the Greeks, Ando, was well pleased with its long tongue, its power of spreading and retracting it, and the muttering motion which it can impart to its neck without the rest of the body. (Hist. Anim, ii, 12.) It has always made familiar to most of our literary readers the familiar name Theocritus Pharamon. It is also the Juncus of the antient Italians. (Pliny, &c.) The Juncus is the boreal of the French, and the Terecito, Terec-o, Terec-t, and Terec- of the Spanish according to Belon; Terecillo, Collaitata, Sierb, petero, Vertilla, and Formicula of the Italian; Gryph of the Swedes; Bende-Huls of Brunswick, Nationus of the Germans, Hunchet, Brunche, and Corpset of the Frenchmen. The Long-Tongue, Emmet-hunter, Snake-Bird, Cuckoo, Cuckoo Maid, Cuckoo's Maid, and Cuckoo Fowl (now Gloucestershire) of the modern British; Goyagi, Gieddori, of the antient British; Aviosi of the Istrians. The neck may be looked for; and from its adventurist at about the same time, some of the modern British it may be seen by the name of the antient British appellations; for gog, must have originated, for in other respects it is not the same as the true Juncus.

The general habits of the species are well described by Mr. Yarrell in his 'British Birds,' He remarks that when found in its retreat, in the hole of a tree, or in a towel, it makes a loud hissing, and stretches out its neck towards each shoulder with grotesque terrors (whence its name Snake-Bird), becomes as male of terror to a timid intruder, when the bird, taking advantage of a moment of indecision, dashes with the speed of lightning from a situation whence escape seems possible.

Caterpillars and a variety of insects form the food of Wyrebeck, and it is a great devourer of ants and their nests. Eldestberry has been mentioned as being a part of its food. Mr. Yarrell states, that the species, which is a large and vigorous one, is found on berried branches of the berry, and the exercise of the muscles attached to it, is able to extend the tongue with such rapidity, that the bird, when the tongue is horny and hard; a large and long gosu-nerated at the under edge of the lower jaw on each side which secretes a glutinous mucus, and transfers the nest from the side of the mouth, where the glutinous mucus the end of the tongue is always covered, was the especial purpose of conveying food into the mouth. The woodcock. So unerring is the aim with which the bird darts out, and so certain is the effect of the stroke, that the bird never fails in obtaining its prey at every attempt. So rapid also is the action of the tongue, in thus conveying food into its mouth, that the observer scarcely has time to make a distinct note of it.
Colonel Montagu says, 'We were enabled to examine the manners of this bird minutely, by taking a female from her nest, and confining her in a cage for some days. A quantity of mould with emmets and their eggs was given it, and it was curious to observe the tongue darted forward and retracted with such velocity, and with such unerring aim, that it never returned without an ant or an egg adhering to it, not transfixed by the horny point, as some have imagined, but retained by a peculiar tenacious moisture, by nature provided for that purpose. While it is feeding, the body is motionless, the head only is turned to every side, and the motion of the tongue is so rapid that an ant’s egg, which is of a light colour and more conspicuous than the tongue, has somewhat the appearance of moving upwards towards the mouth by attraction, as a needle flies to a magnet. The bill is rarely used except to remove the mould in order to get more readily at these insects; where the earth is hollow, the tongue is thrust into all the cavities to raise the ants; for this purpose the horny appendage is used as a guide to the tongue. We have seen the Green Woodpecker take its food in a similar manner.’

The nest is little or null, the smooth, shining, white eggs—from six to ten in number—being generally deposited in the hole of a tree on the decayed wood. The birds are remarkable for local attachment, as the following anecdote, related by Mr. Salmon, will prove:—I wished, writes that gentleman, last spring to obtain the eggs of a wryneck to place in my cabinet, and accordingly watched a Kolb pair that had resorted to a garden for the purpose of incubation; I soon ascertained that they had elected a hole in an old decayed apple-tree for that purpose, the entrance to which was so small as not to admit my hand. The tree being hollow and decayed at the bottom near the ground, I was enabled to reach the nest by putting my arm upwards, and I found, on withdrawing the nest, that the underneath part of it was composed of moss, hair, &c., having every appearance of being formed of the parts of the preceding summer, which I suspect was the case: the upper part was made of dried roots. The nest did not contain any eggs, and I removed it by thrusting it up in the inside of the tree. On passing by the same tree a week afterwards, my attention was arrested by observing two birds leaving the hole, upon which I gently withdrew the nest, and was much gratified at finding it contained six very beautiful glossy eggs, the shells of which were perfectly white, and so transparent that the yolks shone through, giving them a delicate pink colour, but which was lost in the blowing. I replaced the nest and visited it during the ensuing week, and was induced, out of curiosity, to examine it again, when, to my astonishment, I found five birds had not deserted the hole, she having laid six eggs, but only that hid her first, which had adhered to her hair that had not deserted the nest, I kept them, as I was only able to replace the nest by again thrusting it up in the inside of the tree as before, which I did. I again visited the spot in the following week, and saw that they had still perinastically adhered to their female, had hatched out, and that four eggs more had repeated the experiment, but not having an opportunity of visiting the tree until ten days afterwards, I thought at the time that the nest was abandoned, and was not undeceived until I had again withdrawn the nest, having taken the precaution of endeavouring to frighten the old bird off should it be on the nest, which I found was the case, she suffering me to pull the nest to the bottom of the tree before she attempted to escape; there were seven eggs, which are not uncommon. It appears upon William of Malmesbury, who calls Wolstan a cantor of the church of Winchester, says that he also composed an exceedingly useful work on the Harmony of Tones; but that is no longer extant. Bale says he wrote a Life of King Ethelwulf, which is probably a mistake.

The Wryneck.

WULSTAN, otherwise WULFSTAN, or sometimes WOLSTAN. Of these names, which appear to be only variations of the one of the other, there are three Anglo-Saxon ecclesiastics and writers of more or less celebrity.

WULSTAN, a monk of Winchester, of the tenth century, to whom all the three forms of the name are given, is the author of a Latin prose Life of Bishop Ethelwold, whose disciple he had been, and also of a work in Latin hexameter verse (with a prologue in elegiacs) on the miracles of St. Swithin. The former, which is a very poor composition, is printed in the 5th sacram of Mabillon's Acta Sanctorum Ordinis S. Benedicti, fol. Paris, 1806, pp. 606-624. Of the latter only the introduction has been printed (in the same volume, pp. 623-624); but the whole is preserved in several manuscript copies. The verse, though not of much merit, has the reputation of being the best Latin poetry known to have been produced in England in that age. It appears upon William of Malmesbury, who calls Wolstan a cantor of the church of Winchester, says that he also composed an exceedingly useful work on the Harmony of Tones; but that is no longer extant. Bale says he wrote a Life of King Ethelwulf, which is probably a mistake.

WOLSTAN, who was not a monk, became archbishop of York in 1008, holding along with that dignity the bishopric of Worcester, as had also been done by his two immediate predecessors, and died in 1023. There is extant in MS. a letter addressed by him in Anglo-Saxon to the people of his province; and he is supposed by Walney, on probable grounds, to be the Lupa Epicopou to whom are attributed certain sermons or homilies of this age written in the same language. The most remarkable of these is printed, with a Latin translation and notes by William Elstob, in the Dissertatio Epistolarius, contained in Vol. XXVII. 4 G
in the third volume of Hickes's 'Thesaurus,' fol. 1705, pp. 99-100; and there is also a separate edition of the same volume, the fol. 1705, in which the two are contained, the latter is formed, in fol. 1705, of two pastoral letters in Anglo-Saxon written in the name of Wulfstan, by one (which one is matter of dispute) of the two Alfries, with both of whom he appears to have had a personal friendship; the other is said to have been composed in Latin, and then, at Wulfstan's desire, to have been translated into Saxon, that they might be more generally useful.

3. WULSTAN. Bishop of Worcester, is stated by his biographer, William of Malmesbury, to have been born at Tewceton in Warwickshire, to a fair estate; the name of his father was Ethelstan, that of his mother Wulfgiva. From the age he is stated to have attained at his death, his birth must have happened in 1007 or 1008. He began his episcopate in the midst of the persecution of Evesham, but was afterwards removed to the more distinguished seminary of Peterborough. Having at the usual age been ordained a prebendary, he soon after became a monk at Worcester, and gradually rose to be at last prior of the monastery there. In 1062 he became bishop of Worcester on the nomination of Aldred, who, having been two years before removed from that see to the archbishopric of York, had attempted at first, as had for some time been customary, to retain both sees, but was at last, in 1062, removed to Worcester in consideration of only being permitted to name his successor. He chose Wulstan, it is said, conceiving that his mild temper and simple character would prevent him from offering any resistance to his patron's appointment. The estates and benefices upon the see of the see. But this turned out to be a great mistake. Wulstan proved a very danger of a bishop, and, especially after the coming over of the Norman conqueror, to whom he very naturally proved such a valuable ally, that he not only set Aldred at complete defiance, but even compelled his successor, Archbishops Thomas, to make restitution to the see of Worcester of sundry lands or pecuniary dues of which it had been deposed by his predecessor. He also successfully resisted the claim of the archbishopric of York to a jurisdiction over the diocese of Worcester, and got that bishopric declared by the king to be in the province of Canterbury. Wulstan continued in the same favour with Rufus which he had enjoyed with his father; and in the beginning of the new king's reign, old as he was, he proved very serviceable in putting down an insurrection of the adherents of Duke Robert of Normandy, defending his city of Worcester against an army of the rebels led by Roger de Montgomeroy. Wulstan almost rebuilt the cathedral of Worcester from the foundation; and he died in that city, at the age of eighty-seven, on the 19th of January, 1069. Wulstan is not known to have written anything either in Saxon or Latin, but his discourses are said to have been a ready and effective speaker in the former language; but in the work entitled 'Antient History, English and French, exemplified in a regular dissertation of the Saxon Chronicle,' 12mo. Lond. 1830, an attempt is made to show that he was the author of the portion of that venerable record extending from A.D. 1034 to the end of the reign of William the Conqueror. There are two accounts of Wulstan by William of Malmesbury: one in his work 'De Gestis Pontificum,' the other a separate Life, in three books, which is published in the second volume of Wharton's 'Anglia Sacra.'

(Wright's 'Biographia Britannica,' Literarum, vol. 1.)

WURMER, DAGOBERT-SIGISMUND, COUNT OF, a distinguished Austrian general, was born on the 22nd of September, 1724, in Alsace—the territory which now constitutes the French departments of the Upper and Lower Rhine. He commenced his military career in the French service, and having distinguished himself by his conduct in the campaigns of 1746-7, was raised to the rank of captain in the cavalry. His father having resolved to settle in the Austrian states, and become an Austrian subject in 1750, Dagobert resigned his commission and accompanied him. Such emigrations from the French Rhine provinces were at that time far from common: the Alsatians, though French subjects, were then unmixed Germans; in fact the century which has since almost elapsed has only stripped their character of its German nationality, without giving them a French one.

Douglas—Sigismund Wurmser was well received at Vienna. Maria Theresa conferred upon him the officer's coronet of the Austrian, and the Order of the Black and White. He valued less a troop of hussars, which he continued to command throughout the whole of the Thirty Years War. After the battle of Prague he was made Major-General, after that of Lissa, Colonel; after that of Isselburg, Lieutenant General; and after that of Leignitz he obtained the cross of the Order of Maria Theresa. His kind disposition and generosity rendered him the idol of both the officers and men under his command. There is a story told of him illustrative of these features of his character. Having, after the battle of Gotzitz, that a brave but poor lieutenant of cavalry had lost his horse in the action, Wurmser set him one of the best in his stables, with a message to the effect that, having sworn this horse should belong to the bravest men in the army, he begged his acceptance of it.

In 1773 Wurmser became proprietary colonel of a regiment of hussars which subsequently bore his name; and, when the war broke out again in 1778, he was raised to the rank of Lieutenant-General. At the head of a body of 12,000 men, he broke into the territory of Glatz, and on the 18th of January, 1779, surprised the Prussians at Kubelschwerd and defeated them, taking 12,000 prisoners.

The period of Wurmser's career which obtained for him a European reputation commenced in 1780. In January of that year he was sent to the province of Galicia, and the collar of commander of the order of Maria Theresa was the reward of his exploits during that short campaign.

In 1787 he was appointed general-commandant of the province of Galicia, and although the inhabitants were extremely averse to the Austrian yoke, he contrived to make himself a personal favourite. The emperor Joseph bestowed on him the appointment of Feldscheidermeister of that province, with the character of general, and Wurmser was not employed in the war against the Turks in 1789.

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to him the secret of the correspondence between the Prince of Condé and Pichegru. That Austria should have made no effort to turn that negotiation to account was not surprising. In the sincerity of the republican general that power could not have a little confidence, and in the judgment of the Prince of Condé still less. Besides the anxiety of Condé and Pichegru to keep their intercourses a secret from the Austrian government was of itself suspicious. The conspiracy was allowed by Wurmser, the archduke Charles, to be too well known east and west, and it led to nothing but its very natural termination in the ruin of the general who had intrigued with the enemies of his country to subvert the government from which he held his commission. Wurmser, defeated in the battle of the Necker, on the 28th and 29th of October, 1791, entered Mannheim; the citadel surrendered after a bombardment which lasted a few days.

On the 1st of January, 1796, Wurmser received the grand cross of the order of Maria Theresia. His part in the campaign did not recommend him that year till the month of May. On the 15th of June Wurmser gave way before the attack of Moreau and abandoned Frankenthal. The Austrian cabinet, which had relinquished the idea of assuming the offensive in Alsace and on the Rhine, ordered him to move thirty thousand of the best troops in the army under his command without delay upon the north of Italy. An opponent full of the impetuosity of youth and the resources of genius awaited the exasperated general.

On the 15th of July Wurmser advanced towards Mantua. He drove in the French outposts on the Lago di Garda; but Bonaparte, having abruptly broken up the siege of Mantua to precipitate himself on his adversary, met and beat him at Lonato, 1796, 640 feet high, and on the 5th, then at Roveredo, and on the 8th at the gorges of the Brenta. The Austrian general, far from despairing, made an attempt upon Verona; but, repulsed by General Kell- maine, he retreated along the Adige with 6000 foot and 1500 cavalry. He crossed the Brenta, 3640 feet high, and two French divisions detached to watch his motions, threw himself into Mantua. This place was vigorously and skillfully defended by Wurmser; but the defeat of the troops under Alvinczy, want of provisions, and sickness among the garrison, forced him to surrender on the 24th of February, 1797, in the judgment of the best observers, with that chivalrous spirit which marked his early career, left the veteran entire personal liberty, saying that he respected his years, and did not wish to make him the victim of the intrigues who would doubtless avail themselves of his absence to undermine him at Vienna. Wurmser repaid the generosity of the French general in kind: having detected a plot to poison Bonaparte, he put him under his guard.

On Wurmser's return to Vienna, the emperor appointed him vice-archduke. He waged with beauty and patience the war of the confederates. He did not however survive to take possession of his government, dying at Vienna in the month of June, 1797. He was never married: his estates and honours were inherited by a nephew.

The ‘Reise de St.-Hélie’ erroneously attributes to Wurmser the rank of field-marshal, which he never attained. His military skill is unquestionable, notwithstanding his career during the revolutionary war was an almost unbroken series of reverses. It was his fate to command at a time when the revolutionary fervour for a time broke through all the calculations of tacticians. Time has shown that this preternatural stimulus must wear itself out, and organised discipline reassert its ascendancy. Wurmser was one of the first to produce a reaction in Austria Europe during the period of the army's reverses. Even defeat did not for a moment obscure his personal merit; and to the hopeful and persevering turn of mind of Wurmser, the archduke Charles, Brucker, and a few others, it was in great part due to the variety of occupation which survived to assert their due influence when the maniacal revolutionary period had passed over. Personally Wurmser was brave, frank, and benevolent, with a strong devotional turn. To his honour let it suffice to its justice that when, as a Roman Catholic, he unceasingly asserted the right of Protestant soldiers in the Austrian army to perfect religious freedom.

The outline of incidents of this sketch of Wurmser is taken from the ‘Reise de St.-Hélie’, the ‘Biographie Universelle’ and its supplement, checked by reference to the writings of Napoleon, Jomini, the archduke Charles, &c.
**Agriculture.**—The whole of the public and private property contains—


- Arable | 2,440,000 | 1,798,314 |
- Meadows | 738,000 |
- Gardens | 148,000 |
- Vineyards | 84,777 |
- Wine | 2,500,000 |

**Württemberg Acres.**

Württemberg is one of the most fruitful countries of Germany, and agriculture is on the whole carried on upon a good system; the want of sufficient manure is however a great drawback. Great improvements have been made during the present reign, by the encouragement given by the government, and particularly by the encouragement given by the king. The very rigorous laws for the protection of the game have caused the wild-boars, deer, and hares in particular, to multiply to such a degree as to be most injurious to the farmers. But the king's system and the measures of the flourishing prince have completely put an end to this nuisance; an ordinance, issued in 1817, commands the wild-boars to be exterminated in the forests, and to be confined to the enclosed parks; the deer to be diminished as little as possible by the encouragement given by the government.

The forests yield a great variety of fish, which are a source of considerable profit. In some parts of the kingdom bees are kept; there are in all about 70,000 hives. Lives between this years silk-worms have been introduced, with every prospect of success. Leek is bred in ponds appropriated to that purpose, and edible snails in separate reservoirs.

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**Manufactures.**—There are manufactures of almost every description, and though not on so extensive a scale as in some other parts of Germany, they are of considerable importance, and extraordinary progress has been made since the conclusion of the general peace in 1815. The principal are the production of the finest sorts, to which the new instituted Pomological Society is expected to contribute.

The metals and minerals are copper, lead, zinc, iron (at least 5000 tons annually), malleable lead, millstones, freestone, gypsum, quartz, garnet, tourmaline, amethyst, chryso-
olites, rock-crystal, agate, chalcedony, carnelian, opal, jasper, porcelain earth, petteland, fuller's earth, chalk, marl, coal, but not in mineral quantity, and metals. The king's system and the measures of the flourishing prince have completely put an end to this nuisance; an ordinance, issued in 1817, commands the wild-boars to be exterminated in the forests, and to be confined to the enclosed parks; the deer to be diminished as little as possible by the encouragement given by the government.

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**Commerces.**—Though Württemberg cannot be properly called a commercial country, it has a very considerable and profitable trade. The exports consist of the natural productions and manufactures, that is, bread, and all kinds of eatable food, as pears, apples, peaches, plums, and other fruits, wine, and other produce of the land, and the export of the produce of the mines, which include the following minerals: iron, copper, zinc, lead, tin, antimony, silver, and lead. The principal are the production of the finest sorts, to which the new instituted Pomological Society is expected to contribute.

**Population; Religion.**—With the exception of about 12,000 Jews and a few families of Waldenses, and some foreigners, the population is entirely German, partly...
Suabian, partly Franconian, according as they originally belonged to those two circles, the dialect of which they retain. *They are,* says Fischer, "a robust good-looking race of men, but of late years the health of the women in the middle and higher classes has been less vigorous than formerly, and especially in the Roththal and Kochertal, where swollen necks and goitres are extremely common. The main feature of the character of the people is goodness-nature, rather phlegmatic than lively; they are honest, fond of their country, and have been known to suffer severe taxes, the injudicious police measures, and the licentious spirit of the times have had a pernicious influence on their character and morals. To these circumstances we may ascribe the very extraordinary number of robberies and other great crimes; and the turn of the public course of life may be found perhaps in the too great leniency which is shown towards the guilty. With respect to religion the majority are Protestants: the proportion in 1834 was as follows:

<table>
<thead>
<tr>
<th>Sect</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protestants</td>
<td>1,124,021</td>
</tr>
<tr>
<td>Roman Catholics</td>
<td>485,200</td>
</tr>
<tr>
<td>Jews</td>
<td>22,206</td>
</tr>
<tr>
<td>Not specified</td>
<td>177</td>
</tr>
<tr>
<td>Total</td>
<td>1,634,545</td>
</tr>
</tbody>
</table>

The annual increase by the excess of births is above 9,000; but as the loss by emigration much exceeds what is added by immigration, the annual increase is not above 7,000.

**Education.**—Württemberg has always been one of the most enlightened countries in Germany; it has given birth to the most profound thinkers, to some of the greatest philosophers, and to a number of statesmen of Germany which have furnished so many eminent men to the public service as to constitute a national life as Württemberg. For this it is chiefly indebted to its good institutions for education, of which it probably has more than any other country of equal extent in the world.

There is not a parish without its school, and the number of children attending the schools is one in six of the entire population, a much larger proportion than in England and France. There is a university at Tübingen, with about 800 students, seven grammar schools, four gymnasiums, and twenty-eight Latin schools, one superior evangelical seminary at Tübingen, fifty-four inferior evangelical theological seminaries, four seminaries for Roman Catholic priests, one seminary for evangelical and one for Roman Catholic schoolmasters, twenty-four schools of philosophy and sciences, 1470 evangelical and 797 Roman Catholic parish or district schools, and others for particular objects, e.g. for the deaf and dumb, for the blind, for drawing, &c. According to law it is unlawful to be above the age of six years to that of fourteen, and afterwards to attend instruction in the Sunday-school to the age of eighteen. The private literary societies are numerous.

**Revenue.**—The finances are in a prosperous condition; the net revenue and positively known expenditure is something more than nine millions of florins, and the ways and means were calculated in 1835 to afford a small surplus of only 6000 or 7000 florins; at the end of the three years, in 1838, it was found however that the revenue had exceeded the expenditure by 4,731,000 florins, so that the government was able to take off some taxes and pay off a portion of the public debt. The debt amounted on the 30th of June, 1838, to 34,364,202 florins, almost the whole (23,350,000 florins) at par at interest.

**The Army.**—Every subject of Württemberg is liable to serve as soon as he has completed his twentieth year, and he has to serve six years. The army consists of eight regiments of infantry, four of cavalry, two battalions of artillery, two garrison companies, and a squadron of pioneers; in all 18,986 men, including 387 officers: this is the war establishment; but in time of peace only between 5000 and 6000 men are embodied.

**Constitution.**—Württemberg is an hereditary monarchy. The position of nearness to the existing constitution, which was happily completed in 1819 by the present king. His father had drawn up a constitution in 1815, and conferred an assembly of the estates of the kingdom, to which he presented it, fully expecting that it would be joyfully accepted. But circumstances having failed, he was obliged to leave the work unfinished at his death, in 1816, to his son and successor, who, for above two years, was equally unsuccessful, but in 1818 he was so fortunate as to agree with the estates on a constitution which has given general satisfaction. According to this constitution Württemberg is a constitutional republic, divided into the parts of the kingdom, with a diet or parliament, consisting of two chambers. The chambers have a share in the legislature, have the right of presenting addresses and petitions to the king, and of granting taxes. No law can be altered or abrogated without their consent. The king's person is inviolable. His debt is his government; but all his ordinances must be countersigned by the minister to whose department they relate, and who is responsible for them. The crown is hereditary in the direct male line, according to the order of primogeniture; the crown of the male line is the sole title to the succession of the crown. The constitution secures to the subject every reasonable degree of civil and religious liberty, Christians of the Lutheran, Calvinistic, and Roman Catholic faith being placed on a footing of perfect equality. The church was indeed much restricted, if not abolished, by a decision of the German diet of the 10th of October, 1810, to which Württemberg, as a member of the German Confederation, was bound to conform. Württemberg has the sixth place in the German body politic, and was one of the few constitutions of the Confederation which was not altered by the new constitution of 1813. Its contingent to the army of the Confederation is 13,995 men, viz. infantry, 11,856; cavalry, 1750; artillery, 724; with 24 pieces of cannon and 116 pontooniers. Its annual contribution to the chancery of the Confederation is 2000 florins.

**History.**—At the beginning of the fourth century the Alemanni appeared in the country, afterwards called Suabia, as successful and dreaded enemies of the Romans; but in 406 the Alemanni were overcome by the Franks of Clovis. This province, besides that, which subsequently belonged to the kingdom of the Franks, under whose kings it was governed by dukes. About this time Christianity was introduced into Germany (Alemannia). When Germany was divided by Charlemagne, we find Suabia under dukes, who were often changed; and, according to the policy of those times, the emperor's own sons were often put in their place. When the princes of the house of Hohenzollern, who had become dukes of Suabia, was in 1547 overthrown, the imperial estates of Suabia to be governed by members of their family. Philip laid the foundation for the decline of his house, since, in order to gain adherents as emperor, he sold and gave away a great part of the hereditary estates, and thus created a great number of petty princes. The part of Germany was in 1298 occupied by Charles of Anjou, who in 1295, in the acknowledgment of the family now on the throne. The accounts up to his time are little more than mere names, and so vague and uncertain, that it is not easy to understand them. Ulrich, who according to a tradition, was only 20 years of age, was the emperor in 1260, and left his dominions, considerably enlarged, to his two sons, of whom Ulrich II. died in 1279, and was succeeded by his brother Eberhard, who was a minor only fourteen years of age. Eberhard, who acquired the supreme power, was one of the most distinguished princes of his line, and his long reign was marked by great vicissitudes of fortune. The time at which these two brothers commenced their reign was that in which no law had any force but the right of the strongest (sua natura). This state of affairs corresponded to the restless and daring spirit of Eberhard, whose motto was, 'God's friend; everybody's enemy.' Above all he made the Imperial cities, which were rising in importance, feel the weight of his arm. He was always taking advantage of the unsettled state of the duchy to make himself independent; but their increasing wealth laid the foundation for that jealousy which, under the name of the 'War of the Cities,' continued with increased bitterness. When he died in 1319, after partial successes, he was on the point of ruin, when peace was brought about, in 1297, by the mediation of the archbishop of Mainz. Of his son Ulrich I. little is known, and all fresh disputes arose between him and the emperors Rudolph and Albrecht, which however were terminated by an amicable arrangement in 1394. The court—
suffered dreadfully by this continued warfare. On the death of Albrecht, in 1508, Eberhard was a candidate for the crown of Bohemia; but the princes, dread of his ambitious and rapacious policy, elected Henry, count of Luxemburg. The new emperor held his first diet at Speyer (Spire), and Eberhard was summoned to appear and answer the complaints of the Imperial estates. He appeared independently, with a suite of 200 horse, and withdrew, declaring that he was nobody's vassal. He was then put under the ban of the empire, and an army was sent to enforce the decree. Eberhard defended himself brantly, but his enemies were too strong for him. He was taken prisoner, and his dominions were reduced to a state of servitude. He was a year in prison, and then permitted to escape from the hands of the emperor. But Henry dying in 1513, Eberhard's enemies were discouraged, and with the aid of his brother-in-law he speedily recovered the whole of his territory. He was now as powerful as ever, and in the last years of his reign acquired considerable additions to his dominions. At the close of his life he got into a dispute with his brother-in-law, and a defeat experienced by his son in attacking the castle of Reichenberg hastened his death in 1525, after a most eventful reign of sixty years (i.e. from his father's death in 1433).

Eberhard's son, Ulrich III., was of a pacific temper, who however could not avoid some disputes with his neighbours. During his reign the country was afflicted with severe drought, storms of hail, and famines, and the plague (1423), a terrible calamity which greatly reduced the population of the duchy. All these misfortunes were ascribed to the Jews, who were cruelly persecuted. Ulrich made some important acquisitions of territory. He died in 1544, leaving two sons, Eberhard IV. and Ulrich IV. After ruling together for several years, Ulrich wished to have the country divided between them, which Eberhard wisely prevented; and Ulrich dying without children in 1566, Eberhard reigned alone. He was of the same warlike and enterprising spirit as his grandfather, and was obliged to end the ever-existing state of war by internal dissensions, by the intrigues of his enemies, and by the rivalry of Eberhard of Montmorency, who succeeded to the title of prince of the Palatinate. He was not a happy man; he possessed the power of a great prince, but his son died and left him without an heir. He was therefore obliged to declare his dominions a hereditary possession, and a regency governed till he was of age. The reign of Ulrich II. was not a happy one; the desolation of the Palatinate by the French and the Spanish succession caused the country to be repeatedly plundered by both powers. To defend himself he bought a great battery at the battle of Blenheim, but this did not save his dominions from further ravages; and after the conclusion of the peace, Austria, whose interest it was to have devolved himself, treated him with ingratitude, and at length, in 1612, he was compelled to sell his lands, which were given to Hanover. On his death in 1573, he was succeeded by Charles Alexander, who had distinguished himself as field-marshall in the Austrian service. This was a favourable circumstance, because the duchy was in constant feud with the kingdom of Germany by the French, who in fact sent an army over the Rhine under Marshal Berwick. The danger was happily averted. Charles Alexander had embraced the Roman Catholic religion, but he satisfied his subjects by the most solemn assurances that no change should be made in the reformed establishment. He reigned only till 1577, leaving three sons, all of whom in turn reigned after him. His eldest son Charles had only nine years of age, and was brought up from 1577 till 1617 with his brothers at the court of Frederic I. of Prussia, who gave promise of possessing all the qualities requisite for a good prince. He entered on the government in 1617, but he turned out a most extravagant and indolent prince, wholly negligent of his duties, engaged himself in an imprudent war with Denmark, and by the part he took with France against Frederic II. in the Seven Years' war. However, as he grew older he became sensible of his faults; on the fifty-four anniversary of his birth-day (Feb. 21, 1776) he acknowledged the mistakes he had made in a manifesto, and he declared that he wished to be real in the State, and was determined to reform himself. His brother Lewis, who succeeded him, was a highly-natured and kind-hearted man, but did not fulfil the expectations that had been formed of his talents. He died after a reign of little more than a year and a half, and was succeeded by his next brother, Frederic Eugene, who had gained great reputation in the Prussian army during the Seven Years'
ar. He was a man of talent, and well disposed to do

Very thing for the good of his country, but the French

olution, which had commenced three years before his

ession, was doubly fatal by causing Würtemburg to be

ately traversed by hostile armies, and by the propa-

gation of a revolution of which that country was a

outh. The French crossed the Rhine on the 24th of

une, 1796, and on the 18th of July entered Stuttgart;

nd the Austrians being obliged to retreat, the duke

 compelled to purchase peace with eight millions of francs

nd the garrison of Mannheim, which was in the midst of a

nsemble of the Estates, in March, 1797, to deliberate

 a the means of repairing the disasters of the country, but

e could not come to any agreement with them, and died

died apoplexy, on the 3d of June, 1797. He was suc-

ceeded by Prince William Charles, to whose

ife, in vol. x. of the 'Penny Cyclopaedia,' we refer for the

ferent events.

(J. D. G. Memminger, Beschreibung von Würzburg,

Stuttgart, 1857; Der Weimarsche Almanach; Brockhaus, Conversations-Lexicon; Hassel; Cannabich; Rea; Hirschelmann.)

WÜRZBURG, the capital of the Bavarian circle of the

lower Main, is situated in 49° 45' N. lat. and 9° 5' E. long.

This is one of the most important and populous towns of the

n valley of the Main; and the banks of that river, on

over which there is a bridge 200 yards long, adorned with

welve colossal statues of saints. A bishop's see was

established here so long ago as the year 741, and the bishops,

aving gradually obtained large grants, the dux, or the

dues, of the city, which extended to nearly 200 square

miles in extent, with 250,000 inhabitants, which formed the

principality of Würzburg. The revenues of the prince

bishop were 500,000 florins. As Würzburg has been for

100 years the head of a great state, and the bishopric has

formed the capital of a considerable principality,

conferred by a succession of 80 bishops, who were

princes of the empire, and by their power and wealth ex-

ercised great influence in Germany, we cannot be sur-

prised at the grandeur of some buildings, and churches,

which we find in this city. Of the churches which

remain, some are either incomplete or have been

injured by modern additions. The principal are, 1. The

Cathedral, said to have been originally founded in the

eighth century, but which was wholly rebuilt subsequently

in 1042. It contains many fine paintings, and a long

series of monuments of the bishops, each bearing the

word in one hand and the crozier in the other. The

chapel of Bishop Schönborn is very rich, or rather,

consists of a screen of marble and gilt.

2. The church of St. John in Hung, built on the model of

St. Peter's at Rome. 3. The New Minister, containing the

effigies of St. Kilian, one of the earliest preachers of the

gospel in Germany, and the Irish missionary, who was

the apostle of Franconia. 4. St. Mary's, an

elegant edifice, built in the years 1777 to 1749, in the true

German pointed style, with lofty lancel windows: and 5.
The University church (now closed), with the observatory

in its lofty tower. The most remarkable of our secular

buildings are, 1. The splendid episcopal palace, called

the royal residence, though rarely inhabited by the

royal family. It was built by two bishops of the name of

Schönborn, 1720-1744. It is an imitation of the palace of

Versailles, is 270 feet long, 30 feet high, and forms a

parallelogram with two projecting wings. It consists of

six quadrangles, and contains 254 rooms, and cel-

laring for 2200 tuns of wine. The grand staircase is cel-

ibrated for its magnificence and the elegance of its design.

The first floor is occupied, especially as the

emors on their way to Frankfort have fallen into decay

through neglect and the lapse of time. 2. The Julian

Hospital, a very large, wealthy, and admirably arranged

institution. 3. The town-hall. 4. The University, and

Clinical establishment, an anatomical museum, a collection of instruments, a

next library of 100,000 volumes, a cabinet of works of

art, &c.

The charitable and useful institutions are very nu-

nus, among them are a gymnasium, a seminary

for priests and schoolmasters, a veterinary school,

a polytechnic institution, a school of industry, a Sunday

school of design for mechanics and journeymen, schools

for the blind, for midwifery, for swimming, and four hos-

pitals, besides the Julian hospital already mentioned.

There are manufactures of all kinds, yet none on a very

large scale.

In the smaller division of the city, on the left bank of

the Main, there is a steep hill or rock, called the Fränk-

enburg, or Marienturm, about 400 feet high, on which the

citadel stands. It is pretty strong, and, together with the

portion of the city called the Main quarter, is capable of

standing a siege. The view from the citadel is very fine;

the city itself, with its numerous towers and steeples, has

the most striking appearance; and the bright Main, here

a considerable river, with numerous boats and barges, flowing

with many windings through the richly cultivated valley,

gives a charming variety and animation to the scene.

On the slopes of the hill of the Marienturm, on the

Leine, containing about 60 acres, grows the celebrated

Leisten wine, one of the very best sorts of Franconian

wine; and on the Steinberg, which is at no great distance,

grows the Stein wine (Stone wine). On the whole there

are, in the immediate vicinity of the city, 7,000 acres

of vineyards and many large gardens. Near the city is a

hill called St. Nicholas Hill, or the Chapel Hill (Kappellen-

Tberg), from a very handsome church or chapel, which is a

much-visited place of pilgrimage. On the ascent there

is a small church with the statue of St. Christopher, our

Saviour. The view from the summit is nearly equal to

that from the citadel.

The population of Würzburg is 25,000, besides the

garrison. The inhabitants derive some advantage from

the city being the seat of a seminary and several offices of the

circle, and the residence of the bishop and chapter;

but their subsistence is chiefly derived from their

gardens and vineyards. They have a considerable export

trade, by means of the productions of the city,

especially their highly estimable wine. (Brockhaus,

Conversations-Lexicon; Hassel, Erdk.

schreibung, vol. iv.; Stein, Geogr. Lexicon; Der Weimarsche Almanach; Murray's Handbook of Southern Germany; Brockhaus' Lexicon.)

WURZEN, a town in the kingdom of Saxony, is the

seat of a suffragan bishop, founded by Bishop Henry, in 1114,

in the circle of Leipzig, near the river Mulde, on the road

from Dresden to Leipzig, 12 miles from the latter city.

The principal buildings are: Cathedral, which contains

numerous monuments of the bishops; the church of St.

Wenzel; the palace, built in the years 1491-1497; the town-

hall and the chapter-house, in which the Protestant canons

meet every other year. Wurzen was unquestionably a much

more important place in the 17th century, for in this

century it has suffered dreadfully in the many wars which have de-

solated Germany in the last four or five centuries, but espe-

cially in the Thirty Years' War, when it was taken and

burnt, by the Swedes, who committed the most horrible barbarities and excesses. There are now nearly 4000 inhabitants, who gain their living by bleaching, weaving, knitting, and basket-making.

(Brockhaus, Conversations-Lexicon; Engelhardt, Vater-

landzunde.)

WYATT, SIR THOMAS, called 'the Elder,' to distin-

guish him from his son, the subject of the next article,

was born at Allington Castle in Kent, in the year 1503. His

father, Sir Henry Wyatt, the representative of a family

some consequence, originally from Yorkshire, appears to

have bettered his worldly fortune by attaching himself to

the rising fortunes of Richmond, afterwards Henry VII. He

was imprisoned in the Tower, in the last years of Richard

III., and treated with great severity. Immediately after

the battle of Bosworth Field, Sir Henry, who had

been early placed by Henry in situations of emolument,

for in 1493 he was able to purchase the castle of Alling-

ton. He was one of the executors of Henry's will, and

appears to have had a still greater fortune after the death

of the father. He obtained a grant of part of the

estates of Empson, the first that were forfeited to the

crown in the reign of Henry VIII. He survived till

1555.

Nothing is known of the tenor of Thomas Wyatt's life

previous to his being entered of St. John's College, Cam-

bridge, in 1515, when he was twelve years old. He took

his bachelor's degree in 1518, and proceeded to his Mas-

ter's degree in 1520. The next incident in his life, after

the knowledge of which has been preserved, is his participation

in a magnificent feat of arms performed before the king at
Greenwich, at Christmas, 1525. He was then one of the gentlemen of the king's household. He was married to Elizabeth, daughter of Brook, Lord Cobham. The year of his marriage is not known, but his eldest son Thomas was born either in 1521 or 1523. A long interval of seven years, entirely barren of events, succeeds. In 1531, Anne Boleyn came to live in the house of her uncle, and the next year, from Dover to Calais a short time before her marriage; and in July, 1533, we find him officiating for his father as one of the gentlemen of the king.

This meagre array of incidents merely indicates that Wyatt was a gentleman who had been well educated; early settled in life by marriage; and introduced at court under the auspices of a father who had influence enough to obtain for him appointments suited to his age. He had already obtained some reputation as a poet, for, in 1527, in some Latin verses addressed to him from Paris, compliments him on his compositions. In person he was strong, but elegant; with fine features, a penetrating eye, and a mouth of singular sweetness. He was dexterous in the use of arms; he sung plain well on the lute, and spoke French, Italian, and Spanish with fluency. His readiness at repartee is a constant theme of his contemporary elogists.

There is much perplexity in the accounts of the danger in which he was involved on account of Anne Boleyn. So contradictory are the statements, that it is impossible to decide at what time he was placed in peril, and whether as friend or foe of that lady. Fuller's "Sir Thomas Wyatt fell, as I have heard, into King Henry's disfavour about the marriage of Anne Boleyn, her cousin; and by his indiscre- tion, and discretion he extricated himself"—admits of either interpretation. Judging by Henry's character, it seems more probable that Wyatt fell into temporary dis- grace from having shown his aversion to the match, than from having been suspected of too much intimacy with the lady. Anne Boleyn, it may be observed, was executed in May, 1536; on the 18th of March of that year Wyatt was dubbed a knight by the king; and in 1537 he was with the king's sanction nominated high sheriff for Kent.

The remaining part of Wyatt's life was passed in the toils of diplomacy and anxieties of court intrigue. In April, 1537, he was appointed to succeed Peter as Henry's minister at the Spanish court. He remained at Madrid till the beginning of 1538. In May he was sent back to Spain (Bonner being joined in commission with him); in June he followed the emperor Charles V. to Nice on his expedition to meet the Pope and Francis I.; in July he was with the emperor at Paris; and in August at Barcelona. In April, 1538, he was sent to Antwerp, but was detained in Spain till June. The principal service he performed for his king during his Spanish mission was keeping him informed of the intrigues of the court. The indifferent reception that Cardinal Pole experienced at the hands of Charles V. at this time is attributed to the dexterous management of Wyatt. He had urgently solicited to be recalled for nearly a year before he could obtain his wish. His desire to return to England was excited in part by the necessity of looking after his family concerns, his father having died about this time; and in part by the necessity of being at hand to meet the charges brought against him by Bonner. The distaste he entertained for Spain was probably occasioned in a great measure by the anxious state of his mind. All his verses written at this time, whether descriptive or didactic, in business he employed himself in corresponding with his son, or in superintending the education of a young person of the name of Barker, recommended to his care by Wroth- esey, or in composing verses. He mixed little in society; his principal amatory verses were the ambassadorials to Venice and Ferram. He was not allowed to remain long unemployed. Towards the close of 1539 the emperor began his journey through Flanders down into the Netherlands. Wyatt was appointed ambassador-extraordinary to the imperial court, with instructions to join Charles on his road through France, Wyatt joined the emperor at Blois, on the 14th of December, accompanied him to Paris, and left that city on the same day with him (29th January), proceeding direct to Brussels, there to await his arrival. He continued in attendance on the court at Brussels and Ghent till about the middle of May, when he returned to England. Wyatt had zealously seconded Cromwell in promoting the match between Henry and Anne of Cleves. During his residence in the Netherlands he continued advising the policy of the emperor for the extension of the Protestant princes of the empire. By this course he ran counter to the inclinations of the king, and, in common with Cromwell, lost favour with him. Wyatt was made a privy councillor, but having been disgraced with the falsehood of the statement which he had to deal; but prudence had also a share in his resolution to retire from his diplomatic career. He was said that Cromwell's enemies were gaining the ascendency, and he felt that the fall of his patron was inevitable. Although neither allowed to cross-examine Bonner's re- nesses nor produce any of his own, he was acquitted for the month of June, 1541. On the 10th of July follow- ing he was granted a grant of lands in Lambeth from the king, but in 1542 he was created hereditary lord of the king's near of Maidstone; and in the same year he received additional valuable grants. These favours would seem to imply that Henry was convinced of his loyalty and satisfied with his services.

The brief remainder of his life was spent in retirement at Allington. He bes himself informed us that when the season permitted he was used to hunt and hawk; but as the depth of winter he was fond of shooting with his bow and arrow, and at all times of the year he devoted himself to study or the composition of verse. In October, 1542, he was unexpectedly summoned to meet the king, and, eager to show his zeal, overstrained himself in his hasty journey. He was seized in consequence with a fit of the dropsy at Sherborne, and died there on the 12th of the month.

Wyatt was one of the most elegant and accomplished courtiers of his age; and a statesman of great sagacity, dexterity, and integrity. There were four reasons, says Mr. Hawke, which rendered him extraordinary—first, his generous entertainment; secondly, his far- knowing discourse of Spain and Germany, so instinct with the interests that was his masterpiece, they hurrying he studied him for his own satisfaction, as well as for the exigencies of the times; thirdly, his quickness in observing, his civility in entertaining, and his readiness in encouraging every man's peculiar parts and inclinations; and lastly, the favour and notice with which he was invested by his king. He was an able, forward, and successful general. His amatory verses, as is now matter, much like other amatory verses. The language, though less fluent than that of modern bardsingers, who have a language made rhetorical to their hands, has been attributed to the death as one of those whose works mark the progress of the language. His satires have more of matter in them, and more of nerve in the variation. The first is remarkable as containing the earliest English version of the Two Country Mouse. Of Wyat's prose writings, his letters of state business show much shrewdness; his letters to his son exhibit a pure, elevated, and well disciplined mind. Take into account the time at which he wrote, his prose is always struck us as more to be admired than his verse. (Caley, "Life of the Earl of Surrey and Sir Thomas Wyatt the elder.")

WYATT, SIR THOMAS (the Younger), only son of the preceding, was born in 1521, or at the latest in June, 1524. He was married to Jane, daughter of John Hawkwood of his ancient house in Kent. He was born in 1527, when he could not have been more than fifteen or sixteen years old. It has been conjectured that his father was induced to settle him thus early in life with a view to grandeur, and that he was sent to a grammar school, and in November; and in November; and in November, and in November. The supposition is rendered plausible by the tone of two letters addressed by the father to the son a year or two before the marriage, which have been published by Mr. Not. In October, 1542, Wyatt succeeded to his father's estates; and before little more than a year had elapsed, executed a deed (discovered by Mr. Calamy in the Augustan Office), which further corroborates the suspicion of the wildness of his youth; an alienation of his estate of Tournay in Dorsetshire in favour of Francis Wyatt, his infant son.
by the daughter of Sir Edward Dorrel, of Liddelcote. In April, 1543, he had been imprisoned for assailing the earl of Surrey in broken words, the windows of the citizens of London at night with stones shot from a crossbow. Surrey gravely stated in after-life that his intention was, by frightening the citizens through the sudden and mysterious breaking of their windows, to turn them to repentance; but this ingenious defence, if alleged before the privy council, availed neither himself nor his accomplices Wyatt and Pickering. After his release from the Tower, Wyatt raised a body of men at his own expense, and did good service with them against suppressed rebels, as well as against the semi-religious ceremonies of Churchyard that the military talents of Wyatt were soon acknowledged. Early in 1545 he was placed in command at Boulogne, and constantly employed against the enemy in that quarter. When Surrey was appointed governor of Boulogne, in September, 1545, Wyatt was made one of his council. "I assure your majesty," Surrey wrote to Henry VIII. respecting Wyatt, "you have framed him to such towdardness of knowledge in the war, that he is not much like him in your realm for hardness, painfulness, and cir- cumspection, and natural disposition to the war." Wyatt continued to hold his situation at Boulogne after Surrey's recall, and even, it has been assumed, till the place was first attacked by the French in 1552.

During the latter part of the reign of Edward VI. Wyatt appears to have lived chiefly at Allington. The part he took immediately after the king's death is ambiguous. Sir John Bridges subsequently reproached him in words which seem to indicate that he was accused of having made Lady Jane Grey; but Wyatt in his defence before the privy council asserted that "he had served the queen against the duke of Northumberland, as my lord of Arundel can witness." An attempt to surprise Ludgate on the 7th of February failed, and he with one or two of his followers were separated from the body of his troops, and taken in Fleet Street. His conduct at the moment of his capture, as narrated by Stow, gives him the appearance of one who had completely lost his self-possession. He was not tried till the 15th of March, and he is accused during the interval of having implicated Elizabeth and other persons. Wyatt had been in the army during and after the granting some considerable advantages over the royalists. pushed out to Southwark. An attempt to surprise Ludgate on the 7th of February failed, and he with one or two of his followers were separated from the body of his troops, and taken in Fleet Street. His conduct at the moment of his capture, as narrated by Stow, gives him the appearance of one who had completely lost his self-possession. He was not tried till the 15th of March, and he is accused during the interval of having implicated Elizabeth and other persons. Wyatt had been in the army during and after the

Sir Thomas Wyatt appears to have been a zealous Protestant in theory, although religion does not seem to have exercised much practical influence on his conduct. In his youth he appears to have been wild rather than licentious. He was possessed of strength and address, and that kind of courage which carries a man with éclat through a body of nation, or after an hour's engagement. His tone when taken prisoner at Ludgate, and on his trial, was that of a man bewildered and borne down by his reverses. He does not appear to have possessed any of his father's literary talent. It is probable however that he had a considerable portion of his father's remarkable poetic talent. His name. His tone when taken prisoner at Ludgate, and on his trial, was that of a man bewildered and borne down by his reverses. He does not appear to have possessed any of his father's literary talent. It is probable however that he had a considerable portion of his father's remarkable poetic talent.

Wyatt, James, a very eminent architect, if not one of pre-eminent talent, notwithstanding that there is no memoir of him in Cunningham's 'Lives of British Architects,' and that his name has been omitted in a list of architects by a professional writer; for, deservedly or not, he certainly was celebrated among his contemporaries, and occupies a very conspicuous place in the history of the art in this country during the latter part of the eighteenth and the beginning of the nineteenth century. He was born in 1746, at Burton Constable in Staffordshire, where his father was both a farmer and a dealer in timber; and at an early age was introduced to Lord Bagnet, who determined to set out for Italy as an ambassador to the pope, took him with him, from which it is to be supposed that his lordship must have been struck by some symptoms of extraordinary talent, to take charge of a boy of fourteen in order to be employed upon building, which was finished and opened in 1772; but at once stamped his celebrity, and he thereupon became the 'fashionable' architect of the day. The Winter Ranelagh of the metropolis, as a whole calls it, was eminently attractive, and in a country, and itself the fashion and the rage as a place of amusement, was admired of course by all who pretended to taste or good breeding. It was fitted up in a style of grandeur till then unprecedented in this country, and was therefore eminently attractive. The object of the whole was to set Wyatt's Pantheon. There exist indeed views of the great room, or 'roundel,' but they are such that very little reliance is to be placed upon them; and even were they satisfactory in themselves, they furnish very imperfect Information: nor is more to be obtained from description, nothing deserving to be so called having been written at the time.

Generally as it was vitiated, and the name of his person, whether by the press or by the speeches of his friends, or by the character of mansions. Taken collectively, that class of his works afford stronger evidence of extensive practice than of superior talent. Considered individually, their architectural merit is of rather a negative kind. As houses they are commodious and handsome; but when looked at, they show themselves to be the works of an able builder rather than an architect, and exhibit far more of clever mannerism and of uniformly respectable mediocrity than of design. They are built on lines of the designs of the same design. James Wyatt was a degree or two less frivolous than Adam, yet hardly more distinguished: nevertheless it must be acknowledged that we are greatly indebted to both of them, if not for the taste, for the character of their buildings, and the refinement of their interiors, which they introduced into our domestic architecture. Wyatt's Grecian style, admired in his own day for its then almost proverbial 'simplicity' and chasteness, now strikes me as being very justly admired, and the modern taste, which is deficient in that artistic simplicity which results from uniform finish throughout, perfect harmony of character, and unity of expression. There is more of the prettiness than of the beautiful, of the neat than of the elegant, of the simple than of the ornate, in his so-called Italian style; nor could it perhaps be better described than as a sort of genteel commonplace. Probably he would have done more in his art had he been employed on fewer works, for the multiplicity of his professional engagements.
prevented him from bestowing much study on the respective designs. It has been recorded of him as matter for admiration that he was in his leisure hours at improving his designs while travelling in his carriage to the places he was about to be employed at; no wonder therefore that so many of them present such sameness and poverty of ideas, and no one little thing, being more than a few hasty sketches, with hardly any revising.

Accustomed to this specious commonplace and indelent fertility, he could scarcely rise above it on occasions which either demanded or afforded opportunity for achieving something noble. His attempt at Downing College, Cambridge, where however he was not eventually employed, was animadverted upon in a letter from Mr. T. Hope to the architect himself, as being altogether unworthy of the occasion. Neither did Chiswick inspire Wyatt with any kindled feeling for though the wings which he added to the house rendered it more commodious as a residence, they sadly marred its original grace as a finished gem of Palladian architecture.

About the time of James Essex's death (1784), the only architect of the period who had shown any knowledge of Gothic architecture in regard to its details, if not its principles, Wyatt began to turn his attention to that style, which he studied in the original examples. There was indeed hardly any other course to be pursued, for it was at that period there were no textbooks, as at present, to initiate the student into, and facilitate his progress by exhibiting specimens of it in all its manifold varieties. What architects of the present day find delineated and measured for them on paper, and are therefore enabled before they can have time to measure for himself; it is therefore highly to his credit that under such circumstances, and amidst so many other avocations, he gained the insight into it which he did; and that he attained to correctness in his details and individual forms, though not to a clear perception of the spirit and true character of the style. Very great allowance is therefore to be made for him, and it is most ungenerous to call him, as one who is himself distinguished by his knowledge of that style has done, 'James Wyatt of execrable memory.'

His first essay in that style was Mr. Barrett's at Lec near Canterbury (1783), and it was for the architect as happy a hit in its way as the Pantheon had been. Extolled by Horace Walpole, it served to bring the neo-Gothic to vogue for a time, some style of Gothic comparatively pure for the time, yet what now would be termed 'mongrel,' correct in particular features and details—even those however too ecclesiastical, ill applied, and put together without regard to propriety of character. From this, however, he soon became the exponent of our early Gothic architecture, as he and Mr. Milizia, that eminent architect, were so far from displaying any predilection for connected with his future profession, that he was bent upon going to sea, and made two attempts to do so, the first at the age of twelve, the second about three years later, on both occasions he was brought back. At the age of seventeen he was to have gone out with Admiral Kempenfeld, in the Royal George, but being prevented from joining the vessel in time he returned. He at length betook himself to the metropolis in the hope of finding some opportunity of entering into the naval service, but as the American war had terminated, no such opportunity offered.

These disappointments however were all so many steps of good-fortune, which reserved him for higher distinctions than he might else have obtained, even had he resided at some high post in the navy. He was not left a friendless adventurer in the metropolis: his uncle Samuel, who felt for his nephew Wyatt in 1792, as much as he disapproved of the Trinity House (which willed it to the metropolis in the hope of finding some opportunity of entering into the naval service, but as the American war had terminated, no such opportunity offered.

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Wyatt then offered to him a place in the American theatre, which he received with some desire to accept it. However he was not long seated there, for the following year West was re-elected.

After this, scarcely any particulars have been recorded of his life, although materials for a full professional biography of him may possibly be in existence. He himself has left none by publishing any of his numerous designs, whereby authentic memorials would have been preserved to us of the great hand with which he worked. Of Fonthill we have illustrations in two works, the one by Boswell, the other and more complete one by Rutley; yet both together do not afford that satisfactory architectural information which a complete plan of his designs or buildings. Of these last we subjoin a list, which, though scanty and imperfect, may be found convenient as far as it goes, notwithstanding that several design require to be supplied. 

Wyatt died September 5th, 1813, in consequence of being overturn in a carriage whilst travelling from Bath to London. He left a widow, who survived him till January 27th, 1817, and four sons, one of whom, Benjamin, was the architect of the Pantheon in London. Notwithstanding that he had a very extensive and lucrative practice, James Wyatt was so far from accumulating a considerable fortune, as it seems in the profession have done, that he was often involved in pecuniary difficulties, which may have been one reason why he did not care to incur the expense of engraving any of his designs or buildings. Of these last we subjoin a list, which, though scanty and imperfect, may be found convenient as far as it goes, notwithstanding that several design require to be supplied. 

1770-2 Pantheon, Oxford Street, London (burnt down January 14th, 1792).

1778 Doric Gateway, Canterbury Court, Cheapside, Oxford.

1780 Loo, in Kent.

1786 Observatory, Oxford.

1788 Library, Oriel College, Oxford: Ionic.

1789 Salisbury Cathedral: alterations.

1790 Balliol College, Oxford: alterations.

1791-2 Royal Observatory, Greenwich.

1796 Military Academy, Woolwich: castellated.

1797 Designs for alterations at Magdalen College, Oxford.

1800 Windsor Castle: alterations.

1802 House of Lords.


1805 Cashibury.

1831 Ashridge.

1847 Grammar school at Kew, now demolished.

Mausoleum at Chobham, Kent.

Mausoleum at Brockley, Lincolnshire. (Gentleman's Magazine, 1813; Creasy's Translation of Milizia; Pictorial History of England, MS. Mr. Wray.)

WYATTVILLE, SIR JEFFRY, nephew to James Wyatt, [WYATT], and son of Joseph Wyatt, who was born at Bent- upon-Trent in Staffordshire, August 3, 1766, at the free school of which place he received his education. He afterwards entered the school of the Royal Academy, but was so far from displaying any predilection for connected with his future profession, that he was bent upon going to sea, and made two attempts to do so, the first at the age of twelve, the second about three years later, on both occasions he was brought back. At the age of seventeen he was to have gone out with Admiral Kempenfeld, in the Royal George, but being prevented from joining the vessel in time he returned. He at length betook himself to the metropolis in the hope of finding some opportunity of entering into the naval service, but as the American war had terminated, no such opportunity offered.

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tunities seem to have been held out to him at that time from that quarter; for in 1790 he accepted the proposal made him by an eminent builder (Mr. John Armstrong) who had extensive government contracts to join in business with him.

The line of business he now engaged in was highly respectable, nor the less so because eminently lucrative; still it proved for about twenty years a bar to his admission into the Royal Academy as a member of that body, nor perhaps for another reason, that it might be supposed to prevent his being employed very extensively as an architect by many noblemen and gentlemen in various parts of the country, either in improving and making additions to their mansions or creating new ones. Nearly all his works are of the eighteenth century, and from the fact that the exception of the new front of Sidney Sussex College, Cambridge (1833). He was not therefore so much known by repute to the public generally, as he might have been, had he been employed on buildings more to the taste of the time.

It seems to have been unexploited by himself when he was summoned to Windsor by George IV. in 1824; and perhaps it occasioned some surprise in others, when it was first announced that Mr. Jeffrey Wyatt was to be the architect employed in remodelling the Castle—though it may be said that the display of talent as had not till then been offered to any one in the profession for full a century. Important as that work, and great as was the celebrity derived from it to the architect, we need not enter into any account of it. It is said that Sir Jeffrey had a widower, his wife (Miss Sophia Powell) in 1810; and of their three children, Augusta, the youngest and favourite daughter, died at Windsor, in 1825; and George Geoffry in 1833; Emma, the eldest, survived him.

It was the architect's good fortune to behold his great work brought to completion by himself, and it was his intention to publish the designs, which he directed to be done by his executors, under the superintendence of a trustworthy architect. He executed the work and brought it out on a magnificent scale in two volumes, large folio, 1841, and forms, as regards the exterior of the Castle, the most complete and elaborate series of illustrations ever published of any building in the world, but is not so well known as it deserves, inasmuch as the view of the place, there is nothing to afford any information with regard to the interior, which, if not exactly what Sir Jeffrey wished to make it, contains much that would have been interesting both to professional men and the public, present or absent, being, with a like a satire upon the taste of his royal patrons, if not much himself, for in the interior of such a palace there ought to be a great deal worth exhibiting and worth studying.

It is further to be regretted that of his other works no authentic illustrations have been published in any opportunity. This work was not only brought out on a magnificent scale in two volumes, large folio, 1841, and forms, as regards the exterior of the Castle, the most complete and elaborate series of illustrations ever published of any building in the world, but is not so well known as it deserves, inasmuch as the view of the place, there is nothing to afford any information with regard to the interior, which, if not exactly what Sir Jeffrey wished to make it, contains much that would have been interesting both to professional men and the public, present or absent, being, with a like a satire upon the taste of his royal patrons, if not much himself, for in the interior of such a palace there ought to be a great deal worth exhibiting and worth studying.

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tone of that court certainly did exercise considerable influence on the mind of Wycherly, for during his residence in France he solemnly abjured the Protestant faith, and was received into the bosom of the Roman Catholic church.

On his return to England, Wycherly was entered as a student of law in the Middle Temple. It would appear, however, from a passage in Wood's 'Athenea Oxonienses,' that he was previously sent for a short time to Oxford to be educated in the Anglican school. At that university he 'wore not a gown,' only lived in the lodgings of the provost of his college, was entered in the public library under the title of Philosophus Studiosus, in July, 1660, being then about 20 years of age. He departed without being qualified for a degree in any manner, having been by Dr. Barlow reconciled to the Protestant religion.

It is not easy to trace with certainty Wycherly's career from 1600 till 1669 or 1670, when he produced his first play. The accounts of his association with Charles II., intrusted with the Duchess of Cleveland, his introduction to Buckingham, and his intimacy with Rochester, are all derived from conversational gossip. It is sufficiently apparent however that he possessed means which enabled him to mingle with the gay world on a footing of equality, and that, forgetting of the lessons of the 'petite cour savante et prude,' he conformed to the manners of the time. Major Pack states that the family estate was worth 600£ a year in the time of Wycherly's father.

The first play, 'Love in a Wood, or St. James's Park,' was produced after May, 1669, and before November, 1671, with a success which enabled him to take rank as one of the leading wits of the day. His other three plays were all equally fortunate. The Gentleman Dungmire—published in 1671; the Plays Dealer in 1674; and the 'Country Wife' in 1678. The plays however appear to have been composed some time before they were acted—in 1669, 1670, 1675, 1671. There is much in these productions more of a man of the world than of a poet, and their vigour, their licentiousness will prevent their ever again becoming popular. The impression produced upon Wycherly by the severe documen of the Duchess of Montausier's court had been completely obliterated, and his whole life more or less occupied with an unsatisfactory and consecutively mingled. But his intellect, though familiarized with impurity, had not been enervated. He had a strong and just perception of character, and expressed it with vigour and felicity.

Several years after the appearance of 'The Plain Dealer,' Wycherly encountered the Countess of Drogheda, a young, rich, and beautiful widow, at Tunbridge. They met in a bookseller's shop. The lady came to inquire for 'The Plain Dealer,' and the master of the shop presented Wycherly's copy. The lady seeing the real play must have been subsequent to June, 1679, when the earl died. They were soon after privately married. The lady was (probably not without good reason) distractedly jealous. Dennis reports that the lodgings were in St. James's Park, the Garden, opposite the Cock Tavern, and that if at any time he entered that place of refreshment with his friends, he was obliged to leave the windows open that she might see there was no woman in the company. Of course a person of this disposition would feel considerable reluctance to trust her husband at the court. The unfrequency of Wycherly's appearance there gave umbrage, and lost him the favour of Charles.

The Countess did not long survive her marriage. She seems to have expired about 1680, and there is not an indication of the place of her burial that has come to light. Her last husband was a rich and high rank, and his death must have been an event of much public interest. The last time that he was heard of he was in France, and the probability is that he died there. It is also surmised that he was averse to his wife's imprudence, and that the solicitation of the latter was the only cause of his marrying her. The subsequent history of Wycherly is more likely to have attracted to him the munificence of James.

Wycherly did not profit by the king's liberality to the full extent, for, ashamed to confess the amount of his debt, he avoided the commission dropped by the Revolution. His father's estate, to which he succeeded some years later, was strictly entailed, and the income was attached by his creditors. A more decorous, if not a more virtuous generation had risen up, and Wycherly's state of wit was no longer the fashion. He continued to struggle with his difficulties till 1715, the year of his death. Eleven days before his death he married a young woman with a fortune of 1500£. What attractions such a match could possess for the lady is difficult to imagine. He contrived to spend a good deal of her money; but repaid her on his death-bed by the advice, 'not to take an old man for her second husband.'

In 1704 Wycherly published a volume of poems, to which he prefixed an engraving from his picture painted by Sir Peter Lely in the prime of life. Below this portrait was the inscription—'The best of English Poets—Wycherly.' A volume of poems, and 'moral reflections,' which he had in part prepared for the press, was published posthumously in 1725, by Major Pack, who prefixed a very short and meagre memoir of the author. Wycherly's poetic style is defective, and his moral reflections are a confusion of what is properly called feeling in them; but they are not unremarkably characterized by his vigorous common-sense. Some of his 'moral reflections' are terse and pointed.

Major Pack's 'Memoirs of Wycherly, from Dennis's Letters; Biographia Britannica; Leigh's biographical notice of Wycherly in Moxon's edition, at the review of the notice in the 'Atheneum.'
dican Orders about the year 1360. The fact may be so, but the earliest testimony to it, we believe, is that of Anthony Wood, who may have derived his knowledge from the records of the university of Oxford. There is no positive case of the subject among the extant writings attributed to Wycliffe. Dr. J. B. Bury (Papers and Records, vol. i., p. 303), and his avowed copyist Mr. Le Bas (in the 'Life of Wycliffe,' ed. by Mr. J. B. Vaughan, vol. ii., ed. 1828, vol. ii., p. 303), has the Archbishop of Canterbury, and the theological chair of Oxford. The matter is more correctly stated by Lewis, who says that 'he now publicly professed divinity and read lectures in it.' This he did, and assumed the name of Wycliffe, and took his degree of Doctor of Divinity, and became the leader of the anti-Roman party in the university of Oxford. The sentence is not so clearly proved as alleged to be sent by Edward III. to Pope Gregory XI., then residing at Avignon, to treat with his holiness about the practice of papal provision and other abuses against which the English parliament had recently passed several laws and resolutions, more especially the statute 35 Edw. III. 35. The very language of the statute as Wycliffe's name stands second in the royal commission (the first name being that of John, bishop of Bangor) may be taken as attesting the high public reputation to which he had attained in the court, especially the court at Bruges; the negotiation resulted in a very partial mitigation of the evils complained of; but Wycliffe is supposed to have had his aversion to the then prevalent ecclesiastical system considerably sharpened by his experience of the papal court. It is possible however he did not deem it necessary to declaim what of his advantages might fall to his share. Either while he was still abroad, or immediately after his return home, he was presented by the king to the prebend of Asl in the Collegiate church of St. Mary, in the diocese of Worcester: the latter date of ratification was 6th November, 1375. And about the same time he appears to have been also presented to the rectory of Lutterworth in Leicestershire, the right of nominating to which had fallen for his own to the crown, on the death of John Hoby, fellow of New College of Groby, the patron. Lewis thinks it probable that Wycliffe now left Oxford, or at least was at Lutterworth during the vacations. 'Here,' he says, 'as it appears to me, he first assumed the name of Wycliffe, and took the office of a very diligent and edifying preacher, since he preached not only on Sundays, but on the several festivals of the church, and of a most exemplary and unwaried pastor.' There are about 300 of his parish sermons extant.

He now however began to speak his sentiments very openly on the subject of the pope and the church. Lewis quotes him as in one of his writings or lectures soon after his return to England styling the pope 'Antichrist, the pope of Rome, and the moneymakers, clippers and purse-keepers.' The consequence was, that in a convocation of the clergy, held on the 3rd of February, 1377, a citation was directed to be issued for his appearance at St. Paul's on the 19th of the same month, to answer the charges of being an heretic and of publishing certain heretical or erroneous doctrines. Lewis appears clearly to have been the first to have happened in 1378. Wycliffe presented himself on the appointed day; accompanied by John of Gaunt, duke of Lancaster, and the Lord Henry Percy, earl marshall: a violent altercation immediately arose between these noblemen and Courtenay, bishop of London; the crowd, which was very great, broke out into a tumult; and the result was, that Wycliffe was dragged from his pulpit and carried into the street. The mob seems on this occasion to have sided with their bishop against Gaunt and Wycliffe.

A story told by Dr. Vaughan about a reference made to Wycliffe by the first parliament of Richard II., which met in October, 1377, on the subject of the right of the kingdom to retain its treasure, when required for its own defence, although demanded by the pope, and about a vindication of that right which he thereupon drew up, appears to be indifferently supported. It rests, we believe, on no better authority than Dr. Fox's 'Acts and Monuments.' Wycliffe may have drawn up some such paper; but probably not in answer to an application from the parliament. Be this however as it may, the protest against him for his doctrine, and the step which was then taken, were more formidable shapes. On the 5th of May 1377 (not the 11th of June, as Mr. Le Bas states), M. Cardinal Junius, a bull was addressed to Pope Gregory by the archbishop of Canterbury and the bishop of Lincoln, and others dated the same day to the king, requesting his favour and assistance in the matter of the removal of Wycliffe from Oxford, desiring them to withdraw the protection which they had given to the accused theologian. Before the 13th of May 1377, when it was feared they would not come down to Westminster, King Edward was dead, by Archbishop Sudley's mandate the pope was demanded to present himself in the church of St. John the Baptist in the 30th court-day from that time. The fact of his history that is ascertained is his appointment, in July, 1374, as one of the members of a
the following year, 1378, before a synod assembled, not in St. Paul's, but in the archbishop's chapel at Lambeth. This new attempt to put down the reformer however was not more successful than his former; the Londoners, if we are to believe the chronicler Walsingham, upon whom we are principally dependent for our information as to what took place, showed themselves disposed to take part with Wycliffe, and, breaking into the chapel, threw the bishop's body from his pulpit to the floor. He and his soner was secured by the arrival of Sir Lewis Clifford with a message from the king's mother positively prohibiting them from proceeding with the cause. He was let off with a simple admonition to abstain from repeating the objurgations against each other, and the safety of the notorious and avowed heretic, for which he had been transferred to Oxford with a dangerous illness, from which however he recovered. Soon after he got well he is supposed to have published his tract entitled 'De Papa Romano,' or 'Schima Don,' still preserved in MS., in which he made a scathing attack upon all kings throughout Christendom to seize the opportunity sent them by providence of bringing down the whole fabric of the Romish dominion, seeing that Christ had cloven the head of Antichrist and made the two parts fight against each other. This was followed by another writing, both in Latin and English, of which by far the most important was his translation of the whole Bible from the Latin Vulgate, being, it is commonly believed, the first complete English version of the Scriptures which had appeared. He considered it his duty to believe that this great work was finished, and several transcripts of the whole made and dispersed, some years before the death of Wycliffe; but it is probable that it was not all executed by himself, although it may have all undergone his revision.

It was inexplicable how such a work could have been brought upon Wycliffe and his novel opinions by the great outbreak of the Commons, Watt Tyler's insurrection, in 1381, which it was natural enough for the friends of the established religion to affect to refer, in part at least, to the destruction of old customs and the breaking up of all reverence for the authority, which, and his followers had laboured to produce. For Wycliffe, it is to be noted, while he himself remained stationary at Lutterworth or Oxford, preaching or lecturing there, had numbers of disciples whom, under the name of 'poor priests,' he was the forerunner of the modern bishops of the crown, and professed that the 'whole power to care for were basely and falsely ascribed to him by the malicious ingenuity of his enemies.' The two confessions are entirely different. His apostol and admirer, Mr. Le Bas, describes the one in English as a 'strenuous and spiritless examination of all reverance and authority,' while the other, in Latin, is a more systematic examination of the question of transubstantiation, not apparently without a deviation from the common faith as possible. The second given by his enemy Knighton is, that he laid to the audacious bearing, put on the breastplate of dishonor, attempted to dismiss his extravagant and fantastic ideas and prophecies as the productions of a man of learning, who was and professed that the former sentence was pronounced by the bishop of Oxford, but that soon after letters were obtained by the king in which Wycliffe was dared to teaching any longer in the University. This at last in May, 1382, a year after the death of Wycliffe, it is supposed by the execution of the sentence, murder, and by the end of 1382, the name of the archbishop of Canterbury, was touched with the name of the archbishop of York, his entire life is thus described by the biographers.

Wycliffe is supposed to have spent the remainder of his life in his parish of Lutterworth, where however his parish was more active than ever. Indeed the literary prophecies which he is commonly supposed to have written after this date are not without some probability. They are cuttinecred in the circumstances. It is related that some time after he was driven from the University, and sent to Rome to answer the charge of heresy, he wrote a letter to the Pope Urban VI., which appears to rest on nothing but a mere conjecture, addressed to his holies, published by Lewis from a MS. in the Bodleian.
in which he says, 'If I might travel in my own person, I would, with God's will, go to the pope.' But Christ has need ed me to the contrary, and taught me more obeisance to God than to man.' It is supposed that he had an attack of paralysis before this time. He recovered par tially, but found it necessary to hire another priest, John Purneye, to assist him in his parochial duties, and also to act as his amanuensis. At last, while he was in his church hearing mass, on Holy Innocents' day, the 29th of December, 1705, a brick was thrown down upon him, and he was thrown down by another violent fit of palsy, and he never spoke more, but died on the last day of the year.

In the obscurity in which much of the history of Wycke lies buried, it is difficult, if not impossible, to arrive at any certain conclusion as to the real character of the man and the motives by which he was actuated. He was probably honest, as far as honesty consists in sincerity, and he may have been ready to make any sacrifices for the good of his cause. It is also possible that he was scarcely called upon to make any; he continued to the end of his life in the enjoyment of considerable pre emptions in the church which he professed himself anxious to pull down; and in his attacks, both upon the mendicant friars, and, in addition to them, upon the other heads of the clergy, who fell under his lash, he evidently gratified his personal resentments, as well as maintained what he believed to be the cause of reason and true religion. Whatever other Christian qualities he may have possessed, his borough had suffered too little of Christian meekness or charity. His intolerance and violence, and even his coarseness of invective, are unmeasured. As for the particular opinions which he held, it is not quite easy to say what they really were. Certainly it would be strange if he did not hold principles probably different at different times of his life; secondly, we are by no means certain whether many of the writings attributed to him are really his. But generally his views appear to have resembled those of Calvist and presbyterian views; and some of the pamphlets published during his life time were very bitter, and strongly opposed to every great leader of the Reformation of the sixteenth century.

To some of the more peculiar doctrines of the Roman church he seems to have adhered to the end of his life: it may be doubted, for instance, if he disapproved of either the images on the church buildings or of the papal power. He evidently believed in the last; and, what is not very easily reconciled with his repeated denunciations of the papal power as Antichrist, he addresses Pope Urban in the letter mentioned above as the greatest of Christ's views upon, with, and in the other of his persons this pope, and he has been written shortly before, that entitled 'On the Truth of Scripture,' he describes it as being nothing less than paganism for a man to refuse obedience to the apostolic see. In his doctrinal theology he was a strong presbyterian and a strong Calvist, and not especially a presbyterian. Under the care he was independent and voluntary of the most extreme description; opposed to episcopacy, opposed to establishments, opposed to endowments, holding that the clergy should be supported only by alms, and that every man should be able to support a clergyman himself.

In the maintenance of those opinions his earnestness and passion and the dexterity of his logic are far more remarkable than any impression he leaves of solidity of judgment, or of a considerate and reflecting mind. Nor is his style any grace, or other attraction, except its occasional energy or vehemence. Of his writings, the fullest catalogue that has been attempted is that given by Dr. Vauughn (vol. ii., pp. 411-431), which is copied by Mr. Le Neve to the borough, is but a thin book, and not very government he was an independent and voluntary of the most extreme description; opposed to episcopacy, opposed to establishments, opposed to endowments, holding that the clergy should be supported only by alms, and that every man should be able to support a clergyman himself.

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somewhat semiterete and rather contracted at the margins, furnished with 5 filiform thickish obtuse ribs at equal distances, and the furrows between these ribs furnished with a single serra; the commissure is narrow and has two sertae; and the vittae very narrow. There is but one species of this genus, which is a native of the West Indies at Puerto Rico, where it is cultivated with Musa paradisiaca and Lepidium virginicum. It is a smooth plant, with a terebra branched erect stem about a foot high, with terete leaves, much larger and flatter than the flowers. According to Koch, it has an affinity with Parley (Petroselinum) and fennel (Foeniculum), but differs from them in the petals ending in tapering points. The rays of the umbels are from 12 to 14 in number, and the leaves are stiff. It is called, from this, common parsley, and is furnished with a number of seeds, the one being roundish, the other oblong or oblong-obovate. It grows, however, in some quantity in Calais, probably in quality of public notory, where its treaty of Bretigny was solemnly confirmed by the oath of Edward and King John of France. Numerous similes, preferments in the church, for which we must refer to the elaborate detail given in his biographer, being determined upon him in the course of the next three years. By 1363, moreover, he had been appointed to the abbey warden and justiciary of the king's forests on the Trent. On the 14th of March, 1364, he had by order of the king an assessment of twenty shillings on the chequer. On the 11th of May, 1364, he was made keeper of the priory seal, and soon after he is styled secretary to the king, or what we should now call principal secretary of state. He was a close friend of the king, with the chancellor, the treasurer, and the earl of Arundel, to treat of the ransom of the king of Scotland (Raw, taken at the battle of Neville's Cross in 1415), and belonging of the truce with the Scots. And not least among his duties was this one, that he administered the oath of the priory council and governor of the great committee phrases however Lowth supposes do not express the office, but only the great influence and authority which had in those assemblies. There are several obituaries performed, both ecclesiastical and lay, of the time of Wykeham's death, and all of them say he is said to have held; but I do not mention these, because the authorities produced for them are such as do not entirely depend upon. And, as to his ecclesiastical benefits already mentioned, the practice of conferring, both ecclesiastical and lay, on him for the sake of the church by the king, is without doubt a matter of public interest, and to the elaborate detail given in his biographer, being determined upon him in the course of the next three years. By 1363, moreover, he had been appointed to the abbey warden and justiciary of the king's forests on the Trent. On the 14th of March, 1364, he had by order of the king an assessment of twenty shillings on the chequer. On the 11th of May, 1364, he was made keeper of the priory seal, and soon after he is styled secretary to the king, or what we should now call principal secretary of state. He was a close friend of the king, with the chancellor, the treasurer, and the earl of Arundel, to treat of the ransom of the king of Scotland (Raw, taken at the battle of Neville's Cross in 1415), and belonging of the truce with the Scots. And not least among his duties was this one, that he administered the oath of the priory council and governor of the great committee phrases however Lowth supposes do not express the office, but only the great influence and authority which had in those assemblies. There are several obituaries performed, both ecclesiastical and lay, of the time of Wykeham's death, and all of them say he is said to have held; but I do not mention these, because the authorities produced for them are such as do not entirely depend upon. And, as to his ecclesiastical benefits already mentioned, the practice of conferring, both ecclesiastical and lay, on him for the sake of the church by the king, is without doubt a matter of public interest, and to
constituting his successor in the chancellorship, and seems to have for years after this to retain both the favour of the king and the good will of the parliament, and even to have remained in habits of intimate and confidential connection with the Duke of Lancaster, to whose influence the removal of the clergy from the offices of state is said to have been owing.

At this time the bishops of Winchester had no fewer than twelve different castles or palaces, all furnished and maintained as places of residence. Wykeham's first undertaking was to find himself in possession of the see was to set about the task of founding colleges. This cost him above 20,000 marks. He also applied himself with great zeal and diligence to the reformation of abuses in the monasteries and religious houses of all sorts. A charter was granted to him, besides, at Sparkford, near Winchester, founded, in 1332, by the famous Bishop Henry de Blois, brother to King Stephen, in particular engaged much of his attention, and the objects of the charity were indebted to his persevering exertions for the restoration of many rights and liberties which they had originally enjoyed, but of which they had been for a long time defrauded. But the object which from the first chiefly occupied him was his own great foundation of two colleges in which students might be educated for the promotion of science, learning, worship, for the support and exaltation of the Christian faith, and for the improvement of the liberal arts and sciences. His preparatory college or school at Winchester was called the preparatory college or school at Winchester, and in 1328 he had before this purchased more of the grounds of the manor of the Oxfordshire college there, still called New College, to which that at Winchester was designed as a nursery, was afterwards built.

These pious and patriotic exertions however were interrupted by the political storms which overtook the church during the reign of Edward III. He had been appointed one of the council established to superintend the conduct of affairs on the petition of the parliament which met in April of that year; and in July of the same year the Duke of Gloucester and his party, with the Earl of Oxford, who, after the death of the Black Prince in June, and the rise of the parliament in July, took possession of the supplant the sick and dying king, and proceeded to overthrow all the restorations of the last. He had been in office many years before as keeper of the privy seal and lord chancellor. He was heard in his defence, before a commission of bishops, peers, and commons, of the transactions from the first to the last of the judgment was given against him upon one of the articles, involving at the utmost a mere irregularity; and upon this, under the influence of that then prevailed at court, an order was immediately issued for the sequestration of the revenues of his bishopric, and he was at the same time forbidden, in the king's name, to come within 20 miles of the court.

The next parliament, which met on the 27th of January, 1377, was wholly devoted to Lancaster; and when, soon after, on the petition of the Commons, an act of general pardon was issued by the king with the loss of the year of his jubilee, the bishop of Winchester alone was specially excepted out of its provisions. All this, in the circumstances of the time, may be taken as the best attestation to Wykeham's patriotism and integrity. He was then, as before, at the head of the Church, and his power was supreme. The disaffection of Richard II. had, however, now taken up his cause with great zeal; and, whether in consequence of their bold representations on the subject to the king, or for some other reason, it was soon deemed expedient to drop the proceedings against him, and he was allowed to remain in the possession of his lands, castles, and possessions.

But the loss of his ship out three ships of war for the defence of the kingdom and maintaining them at sea for a quarter of a year. And even from this mutiny he was released on the accession of Richard II. a few days after. But the loss of his ship out three ships of war for the defence of the kingdom and maintaining them at sea for a quarter of a year. And even from this mutiny he was released on the accession of Richard II. a few days after. But the loss of his ship out three ships of war for the defence of the kingdom and maintaining them at sea for a quarter of a year. And even from this mutiny he was released on the accession of Richard II. a few days after.

The business of teaching appears to have commenced both at Winchester and at Oxford in 1373; Pope Urban VI.'s bull of licence for founding Winchester College was granted by Urban VI. to a body of 100 men, consisting of the College at Oxford, which he called 'St. Mary College of Winchester in Oxford,' was begun in 1380, and was finished in 1393; that of the college at Winchester was begun in 1397, and was finished in 1333. The papal bull confirm the existing rights of the colleges at Oxford is dated 18th July, 1396. And as soon as his two colleges were erected, he entered upon another great work, which still remains a monument of his taste and munificence: he resolved to rebuild his cathedral in the greater part of its extent.

It fell to the lot of his descendant in the family to live to see that project brought to a close in about ten years or so. [WINCHESTER.] The bishop of Winchester was one of the fourteen persons appointed in 1386, on the petition of the parliament instigated by the Duke of Gloucester, to be a council to the king for one year, and in fact for that term to exercise all the powers of government. As soon as the parliament was dismissed, Richard made an attempt to arrest the Duke of Gloucester and his friends. A commission and statute appointing the council were declared by the judges, on the royal command, to be illegal and null, and to have involved all who had been concerned in procuring them in the guilt of treason. Upon this the Duke of Gloucester and his companions, the lords and commons, resented the innovation with great indignation, and resolutely asserted their right to the crown. Having encamped before London, they sent a deputation, of which the bishop of Winchester was a member, to the king; the deputies were graciously received, and returned with proposals for an accommodation; but in the mean time a body of forces which had been raised for the king in Wales and Cheshire, under the command of his minister, the Duke of Ireland, was encountered by the Earl of Derby and a part of the army of the confederated lords and commons at Radcliff Bridge in pursuit of the king.

This blow compelled Richard to yield to the present. But in May, 1389, another revolution in the government was effected by the king suddenly declaring himself to be of age, and removing the Duke of Gloucester and his friends from office. He departed in the triumph of the power of his faction. The bishop of Winchester, however, was not allowed to share in the spoils of victory, after the advice of the king's minister, the Duke of Ireland, was encountered by the Earl of Derby and a part of the army of the confederated lords and commons at Radcliff Bridge in pursuit of the king.

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1909. Little is known about him; he is not mentioned by Houbraen; and Van Gool, who notices this omission of Houbraen, lived at too late a period to be enabled to learn any facts of his life. Wynants is supposed to have been the master of Houbraen, to whom some of his pictures have been attributed. He was fond of amusement, and idled much of his time in parties of pleasure, and his pictures are accordingly few in number. He generally painted small pictures, coloured with great transparency; the figures and cattle in them are not painted by him. Thomas D'Argenville, the elder, so much admired and venerated, envied a secret. These parts of his pictures were painted by several masters,—by Van Thulden, Ostade, Houbraen, Lingelbach, and A. Vandevelde, which gives some proofs to his wonderful knowledge in the dictionary, and some other books, 1670 is given as the date of Wynants' death, but there is a picture in the gallery of Schlesiehym by him, dated 1673: his name is also written in the painters' company's book of Haarlem for the year 1677. (D'Argenville, Fies des Peintres; Dillies, Gemalde zu Schlesheim.)

WYNHAM, SIR WILLIAM, the third baronet of that name, distinguished in the parliaments of Queen Anne and the first two Georges, was born in 1687. He was of an ancient ennobled family, and a native of Somerset. He was educated at Eton and at Christ Church, Oxford, and afterwards travelled for some time abroad. On his return he was chosen to represent his native county in parliament, and married a daughter of the Duke of Somerset. He thus entered on the public life with great advantages, which his abilities well supported. He associated himself with the Tory party, and, fascinated by the talents of Lord Bolingbroke, he joined in the pleasures as well as the privacies of that nobleman. When, however, Lord Bolingbroke in 1710, Wynham was made master of the buckhounds, and on the 18th June, 1711, was appointed secretary at war. In August, 1713, he was promoted to the chancellorship of the exchequer, and in November, there was sworn a privy councillor. In the disputes between Oxford and Bolingbroke he sided with the latter, and was entirely in his confidence. When the lord high treasurer was disgraced, Lord Bolingbroke wished to have the treasury and exchequer in the hands of the five commissioners; but this arrangement was defeated by the sudden appointment of the Duke of Shrewsbury to the vacant office. This appointment, followed by the death of the queen, put an end to the hopes of the Tory party. The Pretender to the throne had attached himself to many of the Tory ministers, and to none more to Lord Bolingbroke. Wynham himself was not free from suspicion: his intimacy with Lord Bolingbroke and his close friendship with other reputed Jacobites, caused him to be suspected of disloyalty. He was returned to the new parliament summoned by George 1, and protested in such strong language against the proclamation by which the late parliament had been dissolved, that the new parliament was only saved from imprisonment in the Tower by Sir Robert Walpole, who persuaded the House of Commons to spare him with a reprimand from the Speaker. When the rebellion in favour of the Pretender broke out in 1715, intelligence was brought to the house of commons that Sir W. Wynham was concerned in the projected rising in Somersetshire: his father-in-law the duke of Somerset offered to be responsible for him, and desired that he might not be taken into custody; but the council refused to leave him at large, and Sir William was sent to prison in his own house, contrived to escape under pretence of making preparations for his journey to London; and a proclamation was immediately issued offering 1000l. for his apprehension. For some time he eluded the vigilance of his pursuers disguised as a musician, finding that he had but little chance of escape; he surrendered himself, and was committed to the Tower. He denied all knowledge of any plot whatever in favour of the Pretender; and, whether on account of his innocence, the failure of evidence, or the influence of his connections, he was never brought to trial.

He was henceforth distinguished as one of the most active and able members of the opposition. He opposed Sir Robert Walpole on almost every occasion. The most vehement and perhaps the best speech against Walpole's Excise scheme was delivered by him in 1733. Of all the reported speeches, that in favour of the repeal of the Septennial Act in 1734 may be pronounced the most able and argumentative. In 1739, having been in the minority not voted against the address on the Spanish convents, he determined to vote with many others to secede from parliament. In expressing this resolution he applied incurring terms to the majority of the House, and was indebted, for the next time, to Sir Robert Walpole's judicious forbearance for his escape from commitment to the Tower. Nothing could have been more affecting than the scene of his release on the 1st of the 1st of the next session.

The influence of Wyndham in the House of Commons was proved by the immediate consequences of his death in 1740. He had united the Tories and a considerable portion of the Whigs in their opposition to the new ministry. The union that existed in the Ministry after his death was dissolved—the opposition was armed of half its power—and for some time the Ministry had little to dread either from the eloquence or the numbers of its opponents. He died at Wells in Somerset on the 1st of July, 1740. In the same year, his successor in the seat of Wyndham, who afterwards inherited the title of earl of Egremont from his uncle the Duke of Somerset, by a second wife, relented of William, marquis of Blandford, left issue.

Sir William was one of the most popular men of his time, and in parliament was remarkable for the force and spirit of his eloquence. The character of his oratory has been described by a great critic, Mr. Speaker Onslow: 'This was much grace and dignity in his person, and as he was the most attentive of listeners, there was no person who was more pleased with the character of his eloquence, but his eloquence, improved by use, was strong, full, and without affectation, arising chiefly from his clearness of pronunciation, and arguments; in the method of which he was by a sort of induction almost perfect, and when once his force and power in speaking that always animated had been exhibited, and his hearers had been convinced of the truth, which was indeed very ornamental, produced not only the most attentive, respectful, but even a reverent respect whatever he spoke.'

Tindal, Continuation of Rapin: Core, Memoirs of Sir R. Hillyer Correspondence, when Time: Chandler's Drop, Collins, Peerage, by Sir Egerton Brydges.)

WYNTON, ANDREW, a rhyming amateur, living during the early part of the fifteenth century, and prior of the monastery of St. Serf's Inch or Inchley, Loch Lomond, was the author of a manuscript of the history of his parentage or the periods of his birth and death. He is only known as the author of The Chronicles of Scotland, a work of considerable authority and Scottish history, during the interval between the end of the fifteenth and the beginning of the sixteenth century. It is valuable also as a specimen of the Scots language at a time when it closely resembled the English in all but the Gallicisms which pervade Chaucer and Gower, and before it had taken that distinct form which it exhibits in the hands of the poets of the latter part of the fifteenth, and of the sixteenth century. Wynton seems to have strongly felt the difficulty under which all rude chroniclers lie, of drawing a line of demarcation between the domestic and the foreign. The work is divided into nine books.

In honour of the colvyn synne
Of holy nephly, the ghylk dyeynne
Scripture lyouns, a wise cannon shinne
I would despute now this tryste
In myne lykynce and monste me
And she the nextye of the myeastyne
Salt trete fig the begynne
Of the swarte.

Accordingly the author is as good a word, and beginning at the creation, he traces through the greater part of Scripture history to the mythological period of Greece and Rome, mingling the sacred and profane strength together, and describing both the deluge of Scripture and the deluge of the nation's flood. The early and completely finished part of the Scottish annals is mixed up with these widely different

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chronicles. Four books out of the nine are finished before the birth of Christ is narrated. In the printed edition of the chronicle the editor has very properly given only the hystirical titles of the chapters which do not refer to Scotland, and thus of these four books only a few fragments are printed. Wytoun is a tedious narrator, but he is spirited in his histories; and during the strange events he has to record, with the curious traditions of national superstition mingled with them, give the book considerable interest. Sir Walter Scott has been obliged to Wytoun for many striking incidents in his narrative poems. The supernatural parentage of the Sea, in the 'Lady of the Lakes,' of whom it is said,

"Of briar's birth strange tales were told, His mother watched a midnight fold," &c.

taken from the narrative of the birth of Macbeth (book iii. &c. 18). The following is an instance which will give a fair illustration of Wytoun's style. It is said of Sir David Lindsay, of Glemis, in a battle with the Highlanders in 1392—

"Sad on his horse he still standeth, Throw the body he struck a man. Wydtis his spear down to the rade: That man held but his own sword to his men, and above three, we. He present hym, moical apyre standand That man, which outwydt his spear. And with a swape share of his record: "Throw the steepy fur and the bote Three pye or fries, above the two. He struck the lymdyres to the twice: That man was no sme gore bot that last For thare he deit."

This incident is adopted by Scott, in 'The Lord of the Isles,' canto 6, thus:

"Yet still on Colunny's bindree lord, Who prays the chaste with gryme sword, His roke with sword in rest; And through his bloody tarmes beroed, And through his ellyst cirrest. Now to the earth the mountainer, Yet writhed him against the spear, And sawing his broadsword round"—

"... and the story proceedeth Grently that blon's tremendous away, The blood gushed from the wound; And the grim lord of Colunny Hath turn'd him on the ground, And taung in deathly pang, that his blade The mortal thrust so well repaid."

There are several MSS. of Wytoun's Chronicle; one in the Cottonian collection, another in the Harleian, and a third in the Advocates' Library. The best is however that in the Royal Library in the British Museum, from which Mr. David Macpherson has printed the eddication, collating it with the other. This magnificent specimen of British typography was printed in 1795, in 2 vols. 8vo. All the copies of it seem to have been printed on drawing-paper; at least the writer of this notice has never met with any copy on ordinary paper. It contains an introduction, notes, and a glossary.

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X.

X to an Englishman is the representative of what might as well be denoted by the two consonants ks. But in the Greek alphabet it was merely a guttural aspirate, equivalent probably to the German ch. The cause of this change in the power of the symbol appears to admit of the following explanation:—Before the employment by the Greeks of their character Χ or x, it was their common custom to form this sound, as may be seen in Boeckh's inscriptions, rather than by ξ, of which there exist however a few examples, as in the so-called Nanian Inscription. [ALPHEIANS, p. 388, plates ii. and iii.] Now the Romans copied this Greek practice, and we consequently find in Latin inscriptions such forms as maxum, proxxymv, &c. (See the Index of Marini's Fratelli Araldi.) So again coins give us the proper name AXSIVS, where the later orthography would have been axivs; and even existing manuscripts still bear traces of this orthography. Thus the Medieval MS. of Virgil has e x s (Aen., viii. 418), XXSVT (Aen., viii. 567). But the Romans, being generally averse to the aspirated letters (h itself, though written, seems not to have been pronounced by them), had little or no occasion for the character x except in this combination with an ε. The very sight therefore of an x, even before the eye came to the s, raised in the mind the idea of a sibilant, and thus rendered the sibilant itself a superfluous letter; which, because it was superfluous, was discarded before long; and thus the single letter x would perform the office of the two consonants xs. It may be objected to this view, that in one of the oldest inscriptions, the Bacchanaelian (See the plate in the seventh volume of Drakenholt's Livy), we have the form exdeicerent, where the letter in question already has the power of our modern x. This is perhaps an erroneous idea. It would probably be more correct to look upon the character in this word as the simple guttural, thus: exdeicere rent, from which the later form exedere rent would arise. A sibilant in this word would have given the same offence to a Roman, as κτελεων would have done to a Greek ear. It should be recollected too that the old Latin preposition had the form ex, see, as in ecfari, ecfere, &c. (for thus did Cicero write these words), and that the sibilant h was added only before a vowel. An argument against the view we have taken in reference to the change of power in the symbol might be founded upon the fact that the Spaniards employ the very same symbol as a guttural. Thus the geographical names Xeres, Xalapa, Mexico, the X has little or nothing of a sibilant character.

The letter X was the last in the Roman alphabet, neither Y nor Z belonging to it, although the majority of Latin grammarians have placed it there. On these grounds however it will be admitted that the words in which those two letters occur are not really part of the Latin language, but borrowed from the Greek, as zephyrus, zona; or from some Eastern source, as gaza. Such forms as lachryma, hyena, synea, are simply errors of modern editors. The Romans themselves wrote lacruma or lacrima, hiena, or rather hiemip, and silva. But the fact that x was the final letter of the Roman alphabet is established by an anecdote in the Life of Augustus by Suetonius (c. 86), but the reader must be careful to avoid the false reading of Cassonob, who, in defiance of the manuscripts, has substituted a z for an x.

The interchanges of x with other letters are as follows:—

1. x with c, as in the double form, already mentioned, of the Latin or Greek preposition ex or oc.
2. x with s or sk. See S.
3. x with g, as in the Latin augero compared with the Greek .Lookup, and μυρομ compared with min, mix-, and mix-, Latin.
4. x with ps, as the Latin exilis compared with the Greek φυλος. In the same way we find an illustrious Roman officer writing ιξι for ιπι, and thus too προκριμε is the superlative of προ. This change is in fact only another instance of the interchange of p and e, so common between Greek and Latin. See C.
5. x perhaps with h. Thus ξως is probably in the first syllable the equivalent of the Latin hostis and haec.

See O and N. So again hosta is probably connected with the Greek formae.

6. x with z. Thus in Spanish a z is found where the Latin has an x. For example, the Latin words cruz, paz, have become in Spanish cruz, paz, whence the name of the American towns Fera Cruz and Lo Paz.

Xalle, the Turkish name of the seeds of the Priests Christ's Thorn (Paliurus aculeatus). The genus Paliurus belongs to the natural order Rhamnaeae, and has a solid spreading calyx; 5 petals; ovate 2-angled stamens; a pentagonal disk; a 3-celled ovary, with 3 spreading indescribable fruit, which expands into a membrane near the disk, and contains a 3-celled nut. The P. acauleus, Prickly Christ's Thorn, has pubescent branches; ovate, serrated, smooth, 3-nerved leaves, with 2 spines at the base; the one street, the other hooked; the flowers are not crowded in umbels. This plant is a shrub, and inhabits the coasts of the Mediterranean, and is the common form of the hedges, for which it is well adapted, on account of the thick fleshy forms which by its branches grows close together. It has greenish yellow flowers, and the peculiar form of its membranaceous fruit, which looks like a little head with a broad-brimmed hat on it; it is said by the French Porte-Chapeau. The branches are each bent into a curve, the calyx grows in Palestine, and the thorns which grows in Palestine, it has been supposed to have afforded the materials of which the crown of thorns was made which was placed on the head of Jesus Christ. Hence the common name of this plant. The seeds are used by the native doctors of Constantinople in some of diseases, but they do not appear to have very useful properties. They are also used as a dye.

Xanthic Acid was discovered by Zeise in 1832: it is prepared by gradually adding bi-sulphuret of carbon to a solution of potash acid, and is obtained by this operation xanthic acid and xanthate of potash are formed. The salt is colourless, and crystallizes in seeds of considerable brilliancy; when exposed to the air it becomes slightly yellow, and has a cooling, sharp, poisonous taste, it is very soluble in water, but does not taste from the air; it is dissolved by alcohol, and also very slightly, by ether.

When xanthate of potash is treated either with sulphur or hydrochloric acid, it produces with about five times the weight of water, it is decomposed, and xanthic acid possessing the following properties is obtained:—

It resembles an oil, but is heavier than water, and, being insoluble in it, separates from it; it is colourless, and possesses the general properties of an acid; it dissolves in water, and decomposes spontaneously when kept under water.

From the experiments of Zeise it appears that this acid consists of—

<table>
<thead>
<tr>
<th>Equivalent</th>
<th>113</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four equivalents of sulphur</td>
<td>64</td>
</tr>
<tr>
<td>Six equivalents of carbon</td>
<td>30</td>
</tr>
<tr>
<td>Five equivalents of hydrogen</td>
<td>21</td>
</tr>
<tr>
<td>One equivalent of oxygen</td>
<td>8</td>
</tr>
</tbody>
</table>

This acid precipitates several metallic salts of a yellow colour, and hence its name; it is especially the case with the salts of copper and is characteristic of that metal.

When the xanthates are heated they are decomposed, and when xanthate of potash is subjected to distillation a limpid yellow coloured fluid comes over, which Zeise has called xanthetic oil; water however dissolves a small quantity of it; its taste is sweet and sharp, but does not seem to possess the general properties of an acid; it burns with a blue flame, and the evolution of much sulphurous and carbonic acid.
XANTHIC OXIDE. [CALCULUS.]

XANTHITE. [Pendleton.]

XANTHIPPUS. [F. W. W.]

XANTHITE consists of a congeries of small rounded grains, easily separable from each other, and not larger than small grains of sand. It occurs also in foliated masses, which are very friable, and readily fall into grains, some of which are prisms about 4th of an inch in length. It yields by cleavage a doubly oblique prism. The grains are translucent and transparent, and of a greyish yellow colour. Hardness 2-801. Specific gravity 3-221. Before the blowpipe, with borax, melts into a glass, which is yellow while hot, but becomes colourless on cooling.

According to Dr. Thomson’s analysis it consists of—

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>33-032</td>
</tr>
<tr>
<td>Lime</td>
<td>33-990</td>
</tr>
<tr>
<td>Alumina</td>
<td>17-428</td>
</tr>
<tr>
<td>Pernoxide of iron</td>
<td>6-368</td>
</tr>
<tr>
<td>Proteoxide of manganese</td>
<td>2-801</td>
</tr>
<tr>
<td>Magnesia</td>
<td>2-001</td>
</tr>
<tr>
<td>Water</td>
<td>1-896</td>
</tr>
</tbody>
</table>

It is found in a limestone-bed at Amity, Orange County, New York, United States of America.

The cercariae of Paragonimus, mostly referred to the natural order Composita, but of which Link forms a small order called Ambrosiaceae. The genus Xanthium has monoeious flowers; the male flowers have a many-leaved involucre, tubular petals, and a palescenec receptacle; the female flowers are much inferior; four last of the single leaf, which is bilocular, and embraces 2 flowers without petals.

The species are herbs.

X. strumarium, the Lesser Burdock of English botanists, is a naked plant, with the lower leaves cordate, 3-lobed, toothed, and 3-veined. It is cultivated in cultivated places in Great Britain and other parts of Europe. X. spinosum is found in the south of Europe. It has entire or 3-lobed leaves, and is covered with 3-veined, strong, and sharp spines. It is inhabited by the Carapaces of various genera, and is sometimes used as a yellow dye; hence the generic name, from Xanthis, yellow.

(Koch, Flora Germanica; Burnett, Outlines.)

XANTHO, Dr. Leach’s name for a genus of Brachyurus Curassacaeae, placed by M. Milne Edwards among his Cancriens Argus [Platyxeris], between the genera Lagenostoma and Chloridius.

Generic Character.—Carapace very wide, but never regularly oval, and with but little convexity; its surface less smooth, and not curved in its longitudinal direction, except on the anterior portion. Front ordinarly advanced, lamellar, and nearly horizontal; a narrow fissure divides it into two lobes, the border of which is more or less notched in the middle. The orbit is extended, and divided by those of the crabs and of Zostemis. The latero-anterior borders of the carapace are generally prolonged much less backward than in the preceding genera of Cancriens Argus, and only reach ordinarly to the level of the middle of the genital region, so that the posterior portion of the carapace is scarcely more extended than the posterior portion. The latero-posterior borders are nearly always long, straight, and directed much less obliquely inwards than in the preceding genera. The antennary fossae are narrow, transversal, and separated by a delicate partition. The basal joint of the external antenna is placed as in the Zostemis, but in general shorter. The external jar-feet present nothing particular. The sternal plate is inclined to the lateral jar-feet short, and terminated by a very short tarsus, armed with a single horned nail. The abdomen presents seven segments in the female, and in general five in the male.

Geographical Distribution.—The species are numerous, and found in all seas. M. Milne Edwards thus arranges them—

§ A. Species whose carapace is granulatus or tuberculatus above.

a. Four last pairs of feet equal, neither spiny nor toothed.

a*. Carapace covered with rounded and isolated granulations.

Example, Xantho biritissimus. Description.—Carapace granulatus and very strongly embossed throughout its extent. General form nearly oval. Latero-anterior borders of the carapace very much curved and divided into four obtuse lobes. Latero-posterior borders very concave. Ptyerogostomian regions granulatus and hollowed with small furrows, which are continued with the notches of the latero-anterior borders. Feet moderate and compressed. Body entirely covered with small stiff hairs. Length about seven lines.

Locality.—The Red Sea.

a**. Carapace covered with small tubercules conjoined in double rows and having a worm-eaten paper.

Example, Xantho vermiculatus. Description.—Carapace hardly convex, strongly embossed, and presenting on each embossment a great number of united tubercules in form lines which are elevated and carved as it were on each side, which unite in their turn and give the carapace a worm-eaten appearance. Latero-anterior borders divided into four lobes with triangular teeth, whose borders are dentilicated; latero-posterior borders divided into four lobes with much inclined, narrow and deep notch towards the middle of the anterior border of the third joint of the external jaw-feet. Feet with the appearance of being worm-eaten, both above and externally; first pair moderate and rounded above; claws with the tips of the feet last pair of feet with the upper border trenchant and hairy. Length about two inches. Colour whitish. (M. E.)

a a. Four last pairs of teeth neither spiny nor toothed. (Carapace tuberculatus.)

Example, Xantho Reynaudi. Description.—Carapace with very distinct and embossed regions, tuberculous throughout its whole extent, slightly convex, strongly truncate behind and covered with tubercles which do not reach into the two sinuous and truncated lobes; latero-anterior borders reaching only a little below the level of the stomachal region, and armed with four large triangular and tuberculous teeth; latero-posterior borders slightly convev and very long; anterior feet with a swollen appearance and covered internally and externally with large rounded tubercules; claws pointed; succeeding feet slender, rather long, and carrying on the upper border of their third joint a row of six or seven large teeth. Inferior surface of the body highly armed. Length about two inches and a half. Colour red mingled with yellow and white. (M. E.)

§ B. Species whose carapace is not covered either with granulations or tubercules.

b. Hands and feet last four last pairs of feet without a trenchent crest on their upper border.

b*. Carapace embossed and dotted throughout its extent (its latero-anterior borders strongly toothed).

Example, Xantho impressus. Description.—Carapace hardly convex and covered with embossments whose surface is unequal and dotted. Front slightly inclined and divided into four rounded lobes, the two middle of which are large and projecting, and the two lateral ones very small. Latero-anterior borders taking their origin much below the level of the orbit, not prolonged beyond the level of the middle of the genital region, and divided into four large rounded lobes. Anterior feet with a great bi-lobate tubercle on the inner border of the carapace; hands presenting neither tubercles nor spines; claws pointed and rounded at the end; four last pairs of feet rounded. Length two or three inches. Colour yellow, washed with red.

Locality.—The Isle of France. (M. E.)

b**. Carapace embossed anteriorly, but flat on its posterior half (its latero-anterior borders strongly toothed).

Example, Xantho levius. Description.—Upper surface of the carapace remarkably convex; lower border of the opening of the internal case of the orbit advancing to the level of the fourth joint...
the external antenna. Latero-anterior borders of the ear-

nose divided into four teeth; anterior feet moderate; hand

rounded above; upper border of the four last pairs of feet

rounded, furnished with a great number of small tubercles

and very hairy. Length about three inches. Colour

reddish yellow.

Locality.—The Isle of France. (M. E.)

b.*** Carapace without notable embossments, even

on its anterior portion.

b.***. Latero-anterior borders delicate and

deeply cut.

Example, Xantho eranthis. Description.—Carapace

much widened and smooth; front divided into two very

wide, truncated, lamellar lobes, with nearly straight edges; 

latero-anterior borders divided into three delicate and

nearly square lobes, followed by a fourth triangular tooth. 

Anterior feet very unequal and moderate; claws

slightly compressed and curved downwards and

outwards. Stinging feet nearly as in the pre-

ceding species, but more slender. Length about 10 lines.

Locality.—The coasts of Peru. (M. E.)

b.***+. Latero-anterior borders thick and entire, or

only presenting two or three tubercles, 

which hardly project at all.

Example, Xantho Gaudichaudi. Description.—Front

slightly advanced, very narrow, and deeply divided into four rounded and very projecting lobes. 

General form closely resembling Xantho fluidus. Length

about two inches.

Locality.—Chili. (M. E.)

b.***. Fore and four last pairs of feet furnished above

with a longitudinal crest.

Example, Xantho incisus. Description.—External surface of the hands furnished with many horizontal rows of small tubercles. Carapace

very wide, slightly convex, strongly embossed, and pre-

senting on the stomach and hepatic regions many small

transverse crests. Front scarcely inclined, and divided

into four rounded lobes, the two external of which are very

small. Latero-anterior borders of the carapace divided

into four teeth, the two first of which are rounded and

compressed, and the two last triangular and carinated above. 

Anterior feet granulous. Length about an inch. 

Some hairs on the carapace and on the feet.

 Locality.—Australasia.

We illustrate the genus by Xantho fluidus, which is common 

on the English and French coasts, about two inches in 

length, of a reddish brown colour, with black claws.

East Indian plants have been described under Xantho-

chymus by Dr. Roxburgh. Of these the X. pictus is 

the most important. This plant is the X. pictus of 

Linnaeus. It has lanceolate acuminate leaves, yellow petioles, 

and fruit 1-4-seeded. It is a native of the East 

Indies, in valleys among the Ceylon Mountains. It has 

a large tree with white flowers and a yellow fruit resembling 

the orange. The fruit is eaten by the natives, and is 

inviting to the eye, though the flavour is not pleasant to a 

European taste. When nearly ripe the fruit is filled by 

a resinous juice, of the consistency of cream, and of 

a yellow colour, and having acid properties similar to 

those of gamboge, which is imperfectly soluble in petroleum 

less so in water, but in alkaline solutions more. It makes 

a pretty good water-colour, either alone for yellow, or 

with blues to form a green. There is little doubt but that one 

of the vegetable secretions known in the market as gano 

boge is the produce of this plant. The genus 

at present given by Garenin is in the form of rolls; that from Xantho-

chymus is in small granular brittle pieces, and is used

both as a colour and as a purgative.

(Don's Miller; Lindley, Nat. Syst.)

XANTHOMYZA. [XANTHOMYZA.]

XANTHOMYZA, the correct form of XANTHOMYZA, 

which last is used by Mr. Swainson and the catalogues 

generally.

XANTHOPHYLL. It is well known that in among 

the foliage of many forest-trees becomes of a deep 

yellow colour, which, according to Berlerius, is on the 

replacement of the green colouring -matter of the 

leaves, or Xanthophyll, by a peculiar yellow colour 

matter which he calls Xanthophae. The plant 

which this are, that it is a fatty substance of a deep yellow colour, which melts between 100° and 120° Fahr.; it is insoluble in water, but dissolves copiously in alcohol and ether; is a solution exposed to air and light, blackened, and alkalis dissolve it sparingly; the solution, which is of 

a yellow colour, is also destroyed by the action of light.

XANTHOPROTEIN ACID. According to Maier, this 

acid is formed when albumen or any other protein con- 

tained is boiled in nitric acid. It is composed of the free 

escape of azotic gas, and yield a yellow-coloured solution 

while oxalic acid and ammonia are formed.

Two equivalents of protein, 1 of water, and 2 of the 

acid yield 3 of oxalic acid, 2 of ammonia, and 1 of the 

proteic acid. After being washed away with boiling water, 

the acid exists as a tasteless yellow-orange powder, 

which combines with acids as perfectly as with bases; its 

combinations with the latter dissolve in water, and give 

dark and coloured solutions. This acid consists of carbon, hydrogen, 

oxygen, and azotic, combined with water.

XANTHORHIZA, a genus of plants belonging to 

the natural order Ranunculaceae and the tribe Primens. It 

has a calyx composed of 5 deciduous sepals; 5 petals 

2 to 3-seeded carpels, but the seeds are usually 

aborted from abortion. There is last species of this genus 

Xanthorphiza apifolia, which is a small shrub, with irregularly pinnate leaves, with 5 to 7 leaflets, which are deeply serrated. The flowers are small and dark purple, and arranged in branched racemes, which are numerous and arise with the leaves from the scaly buds. The roots are creeping, and of a yellow colour, hence the generic 

name. It is a native of North America from Virginia to 

Georgia, where it grows on the shady banks of rivers. It 

is commonly known by the name "wild lily of the valley." The root 

of the plant is intensely bitter, and is used in America 

as a tonic, but the plant has also acid properties.

The yellow-root will grow in any common garden soil, 

and is easily propagated by means of the suckers, which 

should only be cut from the roots, and so if they 

is good and valuable abundance.

XANTHORNUS, the generic name used by Briceau 

and Cuvier for certain Orioles. The generic character is given 

in the article SUNNINUS, p. 174.

The Baltimore Oriole, or Golden Robin, will serve as 

an illustration of the genus.

Description.—Tail nearly even. Male, orange; head 

neck, back, wings, and tail black; the lateral tailfeathers 

orange at the summit. Length seven inches. 

Female and Variegated, with the back grey and 

mottled with yellow, and the tail orange.

Locality, Habits, &c.—These brilliant birds arrive in 

the United States from South America very early in May. 

The males comefirst. Their natural notes are mellauer.

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they whistle loud and clear; but they are great mimics, and catch up the note of any bird that comes nigh them. Their food consists principally of small caterpillars, beetles, ants, and other insects, but neither young peas nor fruit come amiss to them.

There is nothing,' says Nuttall, 'more remarkable in the whole instinct of our Golden Robin than the ingenuity displayed in the fabrication of its nest, which is, in fact, a tedious cylindrical pouch of five to seven inches in depth, usually suspended from near the extremities of the high trooping branches of trees (such as the elm, the pear, or apple-tree), wild-cherry, weeping-willow, tulip-tree, or buton-wood). It is begun by firmly fastening natural strings of the flax of the silk-weed (Aceldras), or swamp-hollyhock (Hibiscus paaltris), or stout artificial threads, round two or more forked twigs, corresponding to the intended width and depth of the nest. With the same materials, willow, or any accidental raellings, strings, thread, sewing-silk, tow, or wool, that may be lying near the neighbouring houses, or round the grafts of trees, they interweave and fabricate a sort of coarse cloth into the form intended; towards the bottom of which they place the real nest, made chiefly of lint, wiry grass, horse and cow hair, sometimes in deft of hair, lining the interior with a mixture of slender strips of smooth vine-bark, and rarely with a few feathers, the whole being of a considerable thickness, and more or less attached to the exviation. Over the top, the leaves as they grow out form a verdant and agreeable canopy, defending the young from the sun and rain. There is sometimes a considerable difference in the manufacture of these nests, as well as in the materials which enter into their composition. Both sexes seem to be equally adept at this sort of labour, and I have seen the female alone perform the whole without any assistance, and the male also complete this laborious task nearly without the aid of his consort, who however in general is the principal worker. I have observed a nest made almost wholly of tow, which was laid out for the convenience of a male bird, who with this aid completed his labour in a very short time, and frequently sung in a very ludicrous manner with his mouth loaded with a large mass of tow. So eager are they to obtain fibrous materials, that they will readily tug at and even untie hard knots made of tow. In Audubon's magnificent plates, a nest as represented as formed outwardly of the long moss (Tillandia) would be superfluous in the warm forests of the lower Mississippi. A female, which I observed attentively, carried off to her nest a piece of lamp-wick 10 or 12 feet long. This long string and many other shorter ones were left hanging out for about a week before both the ends were wattled into the sides of the nest. Some other little birds, making use of similar materials, at times twitched these flowing ends, and generally brought out the busy Baltimore from her nest in great anger.' (Manual of the Ornithology of the United States and of Canada.)

The four or five white eggs are faintly tinged with bluish, and marked, chiefly at the larger end, though sometimes scatteringly, with straggling serpentine dark brown lines and spots, and fainter hair-streaks, looking sometimes almost like real hair, and occasionally lined only and without spots, according to Nuttall, who says that the eggs which he had seen did not resemble Wilson's figure; though they may vary much. Period of incubation fourteen days, according to Audubon, who states that in Louisiana, where they arrive early in the spring, they frequently rear two broods in the season.

XANTHOXYLACE.E, a natural order of plants belonging to Lindley's Gynoecie group of polypetalous Exocots. It possesses the following essential characters — The flowers are unisexual and regular: the calyx in three, four, or five divisions; the petals usually of the same number as the divisions of the calyx, usually longer than the calyx, and sometimes absent; the stamens are generally twisted and convolute: the stamens are equal in number to the petals, or twice the number, and arise from around the base of the stalk of the abortive carpels; in the female flowers they are either absent or very imperfect; the ovary is made up of the same number of carpels as there are petals, or of a smaller number; the seeds are either distinct or more or less combined; there are mostly two ovules in each cell, sometimes four; the styles are more or less combined, according to the cohesion of the carpels;
endocarp, the seeds are solitary or twin, pendulous, usually smooth and shining with a testaceous integument; the embryo lies in the midst of a fleshy albumen, the radicle is superior, and the cotyledons ovate or flat. The species of plants belonging to this order are trees or shrubs, with exstipulate, alternate, or opposite, simple or bipinnate leaves furnished with stellate hairs. The flowers are either axillary or terminal, and coloured grey, green, or pink.

The plants in this order were included originally by Jussieu in his Terebinthaceae. They were first separated by Martius, and subsequently by Adansoni, for the latter Xanthoxylum, which was subsequently adopted by Adrien de Jussieu. On the affinities of this difficult order Adrien de Jussieu has the following remarks:—"The place originally assigned, and for a long time preserved, for most of the genera of Xanthoxylaceae is sufficiently near affinity between the seeds and the need to be called Terebinthaceae. If, with Brown and Kuth, the latter are divided into several orders, Xanthoxylaceae will be most immediately allied to Burseraceae and Connaraceae, agreeing with the former in the genera with simple fruit, and with the latter in having a compound one. Notwithstanding the distance which usually intervenes in classifications between Auranthaceae and Terebinthaceae, there are nevertheless many points of resemblance between them; Correa de Serra points out a likeness between the Xanthoxylaceae and the other through Cookia. Kuth, in new-modelling the genus Amyris, and in considering it the type of a distinct order, suspects its near affinity with Auranthaceae. We cannot therefore be surprised at the strong affinities existing between the families of Xanthoxylaceae and Terebinthaceae. A mixture of bitter and aromatic principles, the presence of receptacles of oil, that are scattered over every part, which gives a peculiar dotted appearance to the leaves, and which cover the rind of the fruit; all these characters give the two families a considerable degree of analogy. This has already been indicated by Jussieu in speaking of Todalia, and in his remarks upon the families of Auranthaceae and Terebinthaceae; and it is confirmed by the continual mixture of the two in the herbaria of the native and the introduced genus Terebinthaceae, Xanthoxylaceae, and Auranthaceae. The fruit of the Auranthaceae is however extremely different; their seeds resemble, as they do, Terebinthaceae, and are on that very account at variance with Xanthoxylaceae, but at the same time establish a further point of affinity between them and some Rutaceous plants which are destitute of albumen. Unisexual flowers, fruit separating into distinct cocci, seeds solitary, or twin in these cocci, enclosing a usually smooth and blackish integument, which sometimes has a fleshy albumen surrounding an embryo, the radicle of which is superior,—are all points of analogy between Xanthoxylaceae and Euphorbiaceae, particularly between those which have in their male flowers four ovule-bearing stamens inserted around the rudimentary rudimentary stigmas, a pistil, and in the female flowers cells with two suspended, usually collateral ovules. Finally several Xanthoxylaceae plants have in their habit, and especially in their foliage, a marked resemblance to the Ash. The discordant flowers of Fraxinus, its ovary, the two cells of which are compressed, having a single style, two ovules in the inside and scales on the outside, and which finally changes into a samara, which is 1-seeded and 1-seeded by abortion,—all establish certain points of contact between Ptelea and Fraxinus! (Lindley, Nat. Syst., p. 140.)

The species of Xanthoxylaceae are found chiefly in America, especially in the tropical parts. A few of the species are found in Africa, in the Isles of France and Madagascar, in India and China. One only is a native of New Zealand.

All this order to a greater or less extent possess aromatic and pungent properties. The species which are best known and used on account of these properties belong to the genera Xanthoxylum, Ptelea, Ptelea, Ptelea, and Auranthaceae. The following are the essential characters of these genera:—

**Xanthoxylum.** Calyx 3-4-5-parted, with an equal number of petals and stamens; the styles equal in number to the carpels, distinct or connected at the apex; the carpels 1-5, sessile or stipitate, 2-valved, 1-2-seeded; the leaves simple, ternate, and unequally pinnate.

**Ptelea.** The calyx 4-5-parted; the petals 4-5, the stamens 4-5, the flower compressed, 2-3-seeded; the cells 1-seeded, tergid in the centre, each cell expanded into an orbicular reticulated wing; the leaves mostly of the same or sometimes of five leaflets.

**Todalia.** The calyx 5-toothed; the petals 5, the stamens 5, the stigma almost sessile, petals; the fruit fleshy, 5-furrowed, 5-seeded; the seeds 1-seeded; the trinodulate; the male and female flowers on different branches.

**Auranthaceae.** The flowers polygamous, the calyx 5-leaved, the petals 5; the stamens 10, unequal; the style 3, rising from the notches of the ovaries; the carpels 5, tongue-shaped, compressed, membranous, tunic in the middle, 1-celled, 1-seeded; the seeds compressed, albumen absent; the ovules 6-7; the seeds numerous, smooth; the flowers and fruits borne in racemes, 1-2-ranked, paniculate, or paniculate, or on axillary spurs.

The species of Xanthoxylaceae are trees, or shrubs with the petioles, leaves, and branches usually furnished with prickles. Like the whole order to which they belong, they possess aromatic and pungent properties, and are in the countries where they grow under the name of Peppers.

**X. fraxinimum** has unequally pinnate leaves with 3 or 5 pairs of oblong oblong—ovate sessil fruits, thick scented petioles, stipular prickles, and axillary inflorescences. This plant is a tree attaining a height of fourteen or fifteen feet, and is an inhabitant of North America from Canada to Virginia. The bark of this tree and its capsular fruit have a hot acid taste, and are much used as a remedy in the treatment of the toothache. It is of the latter use that this name is applied, and this name is also applied to all the species of Xanthoxylum. A tincture of the bark is recommended as a remedy in rheumatism.

**Ptelea** is a native of Brazil, in the province of Sao Paulo, in the Province of Brazil. It has white flowers, unequally pinnate leaves, with 3 or 6 pairs of oblong, blunt, crenate-serrate, nearly sessile leaflets, which are glandular on the margins; the rachis hardy winged; the flowers in racemose panicles. This tree is called *Ptelea tomentosa* by Linnaeus, and the name is now applied to all the species of Xanthoxylum. A tincture of the bark is recommended as a remedy in rheumatism.

**X. fraxinenum** is a native of the East Indies, in the Province of Badunga. It is armed with small incurved prickles, and has unequally or abruptly pinnate leaves, with 5 or 6 pairs of unequal ovato-lanceolate, entire, acuminate, smooth leaflets. It is called in India *Badrunga*, and the natives use the seeds, which have a warm spicy flavour, medicinally.

The fruit is about the size of a pea, and the outer coat contains an exceedingly pungent piquant and pungent juice, which is supposed to have a piquant and pungent juice, which is supposed to be the origin of the fine scent which Columbus perceived before discovering the island of Cuba.

Most of the other species of Xanthoxylum possess aromatic properties, and are used for condiments or medicines. The roots, and seeds, and seeds of *X. kotschyi* called *трибул*, by the natives, are used in India for intoxicating fish, and are supposed to be the *Fugu hrak* of Annam. In Japan the capsules of *X. piperitum* are used as a substitute for pepper. A number of the species are also held to be antidotes to the action of poisons on the system, and there can be little doubt that the secretions of these plants would be found very stimulant remedies in many diseases. The hard species will grow in the open air in this country, and are well
adapted for ornamenting small shrubbery. They may be propagated by cuttings, or by slips of the roots, which should be planted in pots and placed in a hot-bed until the young plants are strong enough to be removed.

The species of *Bucea* possessing medicinal properties are the *B. antisynderteria* and *B. Sumatrae*. The former is a native of Abyssinia, and is known by its quite entire leaves, which are clothed with small villi on the nerves beneath. This plant is known in Abyssinia by the name of *Wood-goose*. It is used in that country as a specific in dysentery. It contains in its bark an active principle, which resembles Strychnia in its effects, but is from 12 to 16 times less energetic than that alkaloid. The *B. Sumatrae* is a native of Sumatra, the Moluccas, and China, and is said to have properties very similar to those of the first species.

*Welcker, an* (1839), of Mauritius, *Xanthus*, *Xanthus indica* is adapted to the Archipelago. *XAN'THUS* is a more or less resinous, aromatic, and is employed in India as a remedy against the remittent fevers which are caught in the jungles of the Indian hills.

The species of *Todalia* are dwarf shrubs, with alternate trifoliate leaves, full of pellucid dots. The *T. ter-leata* is covered with recurved prickles, and has ovate-oblong leaves. Various species of this species have been recorded, and are found in various parts of the East Indies, in Ceylon, the Mauritis, Malabar, and the Indian Archipelago. It is hardy, and aromatic, and is employed in India as a remedy against the remittent fevers which are caught in the jungles of the Indian hills.

The species of *Althana* are large trees, and their timber is used for various purposes in the countries in which they grow. *A. glandulosa* is a native of China and the Moluccas, where it is called *Althana*. It attains a height of 30 feet, and has unequally pinnate leaves, with the leaflets glandular beneath the teeth. The leaves of this tree are three feet long; the flowers are of a whitish green colour, and have a disagreeable odour. When the bark is wounded it gives a resinaeous juice, which hardens in a few days. The wood is heavy and hard, and is susceptible of a very fine polish. This tree grows well in England, and is a handsome addition to ornamental plantations. It is easily propagated by slips of the roots.

*Malabarica* is a large tree, and is a native of Malabar. It has a large fruit and very large leaflets. The root is bitter. The *A. amara* is a native of India. The wood is used for making sheaths for spears, &c. A resinous juice flows from the bark when wounded. The fruit is triturated with maize and mixed with rice in decoction.

(Don's Miller: Lindley, Natural System; Burnett, Outlines of Botany: Bishop, Lehrbuch der Botanik.)

*XANTHUS* [LYCIA].

XANTHUS [XANTHOCLEAE].

XANTHUS [LYCIA].

XANTHUS, [XANTHOCLEAE], one of the early Greek historians, as, according to Suidas, a son of Candaules, and born at Sardes. Strabo (xiii., p. 628) admits, with other writers, that Xanthus was a Lydian, but he says it is not known by what name he was called. He is said to have written the history of Lydia, which he lived, we know, from a fragment of Phorus, that he was older than Herodotus, who is even said to have been induced by Xanthus to undertake his great historical work. But it appears that Xanthus cannot have written the whole of the history of Lydia, for the notion of the Persians taking of Sardes (the Ionians, in n.c. 499),—agrees with these facts. Xanthus wrote a work on Lydia (Achaeus), in four books, in the Ionic dialect, of which however only a few fragments are extant. It was written at Sardes, and was composed of the notices of Xanthus, who wrote about the time of the taking of Sardes (by the Ionians, in n.c. 499),—agrees with these facts. Xanthus wrote a work on Lydia (Achaeus), in four books, in the Ionic dialect, of which however only a few fragments are extant. It was written at Sardes, and was composed of the notices of Xanthus, who wrote about the time of the taking of Sardes. Also, as Xanthus himself states, on the authority of the Persian historian, Xanthus, who wrote about the time of the taking of Sardes, and was composed of the notices of Xanthus, who wrote about the time of the taking of Sardes, it is also known that Xanthus was also a native of Cappadocia, that Dionysius surnamed Scythe-
to make us regret the loss of his works. An anecdote in Laerlius is pertinent, as showing that he did not expect a person to come to the study of philosophy without the necessary preparation. A man who was unequipped with mathematics, geometry, and astronomy wished to become his pupil, but Xenocrates told him to be gone, for he had not yet got hold of the handles of philosophy.

(Diogenes Laerlius, iv., Xenoareus, and the Note of M. de Beaucourt, *Greeks and their Doxopolc Studies*, vol. ii.)

XENO CRATES (Xenokrates), of Aphrodias, a Greek physician, who is commonly supposed to have lived in the reign of the emperor Tiberius (A.D. 14-37), though some critics are inclined to place him about B.C. 40, but on the other hand this point is a topic for discussion. Respecting the life and literary activity of Xenocrates we know nothing, except that he wrote a work 'On the Advantages or the Nutriment derived from Animals' (μαθηματική ἐπιστήμη τῶν θηρίων), a work which was never not quite complete, was first published by Con. Gesner, with a Latin translation by J. B. Bovaruius, and Scholia, Zürich, 1593, 8vo. More complete MSS exist at Hamburg, in the Vatican library, and at Paris, and from them the editors have completed the text, and given us the treatise. The new edition after that of Gesner is that of J. A. Fabricius, in his 'Bibliotheca Graeca' (ix., p. 433, &c. of the old edition), which was followed by that of J. G. F. Franz (Frankfort and Leipzig, 1779, 8vo., with various readings and notes, and a glossary; a second improved edition appeared at Leipzig, 1779, 8vo.), and that of Naples (1794, 8vo., with new various readings and notes by the editor Caietanus de Ancora). The best critical edition of the Greek text is that of A. Coray (Paris, 1814, 8vo.), in which Coray contains the work on the saltation of things. It is Coray's opinion that the author of the work 'On the Nutriment derived from Animals' is not the physician Xenocrates, but the philosopher Xenocrates.

XENOPHON (Xenophon), a native of Colophon in Ionia. His period is uncertain. Diogenes says that he flourished in the 60th Olympiad (B.C. 538), which will bring him somewhat about the period of Anaximander. Cicero says that he lived a little before Anaximander, fixes his birth in the 40th Olympiad, or about B.C. 620. Though it is not said that he ever resided at Elea (Velia) in Italy, yet this must be assumed to be so, as he is always considered the father of the Eleatic school. Elea was founded by the Phocaeans of Ionia, after they had left their country, which was invaded by the Persians under Cyrus (B.C. 546). The date of the foundation of Elea is fixed about B.C. 536; but there is no direct evidence to the fact that Xenophanes was one of the colonists of Elea. The statement which Diogenes makes is, that, being a native of his country, he lived at Zancle and Catania in Sicily, which is rather vague. According to Timaeus, Xenophanes was still living in the time of the first Hiero and Epiphanes, about B.C. 477, which is entirely inconsistent with the statement of Aristotle. His verse, however, by Diogenes Laerlius make him ninety-two years of age at the time when they were written, and, according to the chronology of Apolloeus, this would be his age in the year 424, but according to Aristotle he lived till the time of Darius and Cyrus; and the first year of the first Darius is B.C. 521. In all this uncertainty perhaps it is safest to adopt the opinion that he lived between the time of Pythagoras and Heraclitus, for he mentions Pythago-

rastas and the doctrines attributed to him.

Xenophanes was a poet and a philosopher. He was one of the eminent poets of Greece, and his elegies are of the symposiac character. A pleasing fragment of one of his symposiac poems is preserved in Athenaeus (παρ. 482 ed. Cassaub.), who has also preserved some of his epigrams (x. p. 418), in which he expresses words of the audacity of likening the divine to the human is added, that if animals could make representations of the deities, they would make the representations like themselves. Assuming that the deity is the most perfect being, and that, however unlike, all endowed with equal powers of seeing, comprehending, and hearing; he is the comprehensive unity of all things, which all things are, or, as Cicero expresses it, 'he is the last of men, but the first of gods,' and for God, unproductive and eternal. He is eternal, because he could not proceed from anything else; pure intellect, or reason. His notions of the deity were obscurely express'd, and not very logically maintained in his assertion that the deity is neither moving nor at rest. God rules and directs all things as they appear to us in the imperfect manifestation of the one eternal. We cannot through them attain to a perfect knowledge of what he is, and all our speculations on the true nature of things are vain.

"No man has seen the truth, and man shall never know what is that truth of God and the Universe."

'To those who shall choose to say what's near to truth, Man is set over all the universe, and is a confused world, and he's a noble soul, and he's a noble soul in all his knowledge.

Thus God's true nature cannot be known. Men contemplate individual things as they appear, which is no true existence of themselves, and while they seek to reach the knowledge of God, he is distracted by various and the appearances to which he cannot apply his mind. Something that he seems to be beyond his own nature, and he does not desire to know his own nature. His doctrines, the striking feature of which is the reflection of the opposition between the pure truth and the various appearances. [ELEATIC SCHOOL.] His philosophy, however, is not well understood, and it is difficult to reconstruct this part of his system, as it is not easy to see from the extant fragments what connexion between his physical and theological views is not true of his physical system, as it is not true of his philosophical system. Apollodorus is not worth mentioning, and as an isolated fact, that, since he was a native of Colophon, he said that the moon is inhabited, it is not true that it contained many cities and mountains. The remarks that his verses were not so good as those of Ulysses.
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Aristotle, Historia Xenophon

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XE-NO-PHON ('Xenophon'), the son of Gryllus, an Athenian citizen, was a native of the Attic deme Ereucha. The only extant biography of Xenophon is by Diogenes Laërtius, which, as usual, is carelessly written; but this biography is scattered notes of antient writers, most of which can be considered Xenophon's own works, are the only materials for his life.

There is no direct authority either for the time of Xenophon's birth or death, but these dates may be approximately determined from the books of Thucydides and the writings of Xenophon himself. It is generally agreed that Socrates saved Xenophon's life at the battle of Delium, a.c. 424, a fact which there seems no reason for rejecting, and from which it may be inferred that Xenophon was born about a.c. 444. In his 'Helleonici' (vi. 4, 35) he says, "Xenophon, the youngest of the pupils of a huge rambler, which took place a.c. 397, and Xenophon was of course alive in that year. This agrees well enough with Lucian's statement that Xenophon attained the age of above ninety ('Macrob., ii. 24)."

Such has been said as to Xenophon's age; but he did not reduce to any systematic form the mode in which the Deity must be viewed in relation to the visible phenomena. He speaks of the Deity as a self-existing all-powerful Being; and he also speaks of all things as being God. Thus his system, so far as we can ascertain, left room either for the Pantheistic interpretation or for the doctrine of pure Deism. Aristotle says (Metaph., i. 5) that Xenophon introduced the doctrine of the unity of the one according to reason and the one according to nature, but neither did he ascertain the nature of each, but looking at the whole heavens he said, The one is God. The system of Xenophon is discussed at great length by Cousin (Bisog, Univ., art. 'Xenophon'), and with considerable ingenuity. The following paragraphs in the present article will indicate all the sources which the reader may wish to consult on this obscure subject.

The work attributed to Aristotle, entitled 'On Xenophon, Zeno, and Gorgias,' should be entitled 'On Mellissus, Xenophon, and Gorgias.' It is one of a rare work, which, as far as I am able to judge, attempts a view and a criticism of the ELEATIC philosophy. (Biographical Dictionary of the Society for the Diffusion of Useful Knowledge, art. 'Aristotle.')

The chief fragments of Xenophons are collected in the great works of Diogenes Laërtius and of Diogenes Phœnix, which are sometimes called Xenophanes.

The capture of Thebes (Socrates) took place a.c. 398, and Xenophon himself was then in Thebes. He was wounded and fell into the hands of the Persians. He was conducted to Susa, that he went before a.c. 397 than after. It is not known if Xenophon wrote anything before the year a.c. 401, though Lebronne with considerable plausibility would assign the composition of the 'Banquet,' or 'Symposium, and of the 'Hiero,' to a period before a.c. 401.

There is another question in the life of Xenophon that remains to be discussed, which is somewhat connected with the chronology of his own life and with that of Thucydides. Laërtius states, 'It is said that Xenophon made the books of Thucydides which he had not written himself known, though it was in his power to appropriate them to himself.' There has been a difference of opinion as to the time of the death of Thucydides, and Dodwell, by misreading the passage in Thucydides (iii. 116) as to the third eruption of Aetna, which is the one mentioned, has concluded that he was alive in the year a.c. 395. But this is a mistake. The third eruption there spoken of is that of the year b.c. 423, the sixth year of the Peloponnesian war, and there is no evidence to render it in the slightest degree probable that he ever finished it. That he intended to finish it, is clear enough from the first chapter of the eighth book. Xenophon commence where the history of Thucydides breaks off, and are a continuation of the work of Thucy- dides. Thucydides was recalled from exile b.c. 403, but it is not known how long he survived his recall. The fact that he was not having finished his history leads to a probable conclusion that he did not survive the termination of the war many years, but such conclusion is only a moderate probability, for there are many reasons besides want of time, why a man does not finish a large undertaking.

Lebronne assumes that Thucydides died at the year a.c. 402, but there is no evidence for fixing on this year, and Lebronne has been induced to do it simply in order to give to Xenophon the honour of making known the events of the war before the year a.c. 401. There are no certain, he says, that Xenophon was at Athens in the year a.c. 402. But though we may admit the truth of the story, that Xenophon was the first editor of Thucydides, and may even have added the eighth book from the materials collected by Thucydides, there is no reason for fixing the date of this publication before the year a.c. 401 rather than after.

In a.c. 410 Xenophon went to Sardes to Cyrus, the Persian, the brother of Artaxerxes Memon, king of Persia. He is said to have advised Cyrus to go to Delphi and ask the god (Apollo) to what gods he should sacrifice and make his vows in order to secure success in the enterprise which he meditated. The god gave him his answer, but Xenophon blamed him for not asking whether he should undertake the voyage or not. However, he had obtained an answer from the god. Xenophon advised him to follow the god's commands, and accordingly Xenophon set out for Sardes, where he found Cyrus and Xenophon just ready to leave the city on an expedition. This story is characteristic both of Socrates and Xenophon.

It was given out by Cyrus that his expedition was against the Persians, and all the Greeks in the army were deceived, except Clearchus, who was in the secret. The object of Cyrus was to detach his brother, and to send an army to hold a short time the city of Ephesus. The two brothers met at Cumae, and not far from Cumae, Cyrus fell in the almost bloodless battle that ensued. His barbarian troops were discouraged and dispersed, and the Greeks were left alone in the centre of the Persian empire. Clearchus was by common consent mixed to take...
command, but he and many of the Greek commanders were shortly after massacred by the treachery of Tissaphernes, the Persian satrap, who was acting for the king. It was now that Xenophon came forward. He had hitherto merely followed the army of Cyrus, and had neither held a command nor even been considered as a soldier. He introduced himself to our notice at the beginning of the third book of the 'Anabasis' in that simple manner which characterizes the best writers of antiquity. From this time Xenophon became one of the most active leaders, and under his judicious guidance the rest of the troops effected a retreat across the high lands of Armenia and arrived at Traspeza (Trebisond), a Greek colony on the south-east coast of the Black Sea. [Anab.] From Traspeza Xenophon conducted the Greeks to Chrysopolis, opposite Cyzicus. Both he and the Athenian generals joined Xenophon to join him. At the request of his soldiers Xenophon conducted the troops back into Asia, and they joined the army of Thimbron (b.c. 399). Immediately before giving up the troops, Xenophon with a part of the Thimb'ron's forces returned to the plain of the Caicus, for the purpose of plundering a wealthy Persian named Asiades. The Persian was taken, with his women, children, horses, and all that he had, Xenophon received a good share of the plunder. (Anab., viii. 43.)

It is uncertain what Xenophon did after giving up the troops to Thimbron. He remarks (Anab., vii. 7, 57), just before he speaks of leading the troops back into Asia, that he had not yet been banished; but as it is stated by various authorities that he was banished for his part in the expedition of Cyrus against the Persian king, who was then on friendly terms with the Athenians, it is most probable that the sentence of banishment was passed against him in the year b.c. 399, in which Socrates was executed. It seems reasonable, therefore, that the execution of Socrates should be followed or accompanied by the banishment of his pupil, who was adding to his former offence that of putting troops in the hands of the Lacedaemonians to act against the Persian king. Letronnais, however, would place the execution of Socrates in b.c. 402, but it is much more likely that he stayed with Thimbron, and with Dereyllidas, the successor of Thimbron; and there are various passages in the 'Hellespont' which support the conjecture that the sentence was repealed after the death of Athens. Stesicleides, quoted by Diogenes, places the death of Xenophon in b.c. 359; but there is much uncertainty on this matter. (Clinton, Fast. Hell., ii. 32 and his remarks on the death of Alexander of Phera.)

Probably he died a few years after b.c. 359.

The extant works of Xenophon may be distributed into four classes:—Historical—the 'Anabasis,' the 'Hellenic,' and the 'Cyropaedia,' which however is not strictly historical, and the 'Life of Agesilaus';—Philosophical—the 'Hippocrates,' 'On Heraclea,' 'On the Return of Oracles,' 'Political,'—'Republic of Sparta and Athens,' and the 'Receives Attica,'—Philosophical!—'The Memorabilia of Socrates,' 'Economic,' 'The Symposium, or Banquet,' the 'Hetaerae,' and the 'Apology of Socrates.' Diogenes quotes many letters attributed to Xenophon, but, like many other productions of the same class, they are not genuine. The works of Xenophon as enumerated by Diogenes are exactly with those which are extant, and we may therefore conclude that we have at least as many works of Xenophon published, though all of them may not be genuine. It is true that Diogenes says that Xenophon wrote about forty books ('biblia'), but he says that they were variously divided, from which expression it is evident that he intended to reckon the several divisions or books as we ree them, of the 'Anabasis,' 'Hellenic,' 'Cyropaedia,' 'Memorabilia,' as distinct biblia, and we have left to the whole the number of thirty-eight, which is near enough to forty.

The editions of the collected works of Xenophon and of the separate works are very numerous. The 'Hellenic' was the first work that appeared. It was printed in 1503, folio, under the title of 'Republics,' and as a supplement to his edition of Thucydides, which was printed in 1502. The first edition of the works of Xenophon was printed by P. Giunta, Florence, 1503; but the 'Apology' and the 'Cyropaedia' were the only works from which he was able to give a complete text on the constitution of Athens are wanting. The edition of Andria of Asotn, 1523, folio, contains everything except the 'Apology.' The first complete edition of the works of Xenophon was the Giunta edition of 1543, 3 vol. 8vo, with a preface by Melantheum, who also added the
Apology, which had been edited by John Reuchlin (Capitoli), at Hagenau, 1530, 4to. The Basel edition of 1545, fol. printed by Nic. Brylinger, is the first which contains the Greek text with the Latin version. The editions of Henry Stephens, 1671, 8to, contain an amended text; the edition of 1685 has no Latin version, but that of 1681 has. The editions of Stephens were the foundation of three editions of Johann Loewenclau, 1772, commonly called Leucclavii, Basle, 1669, Frankfurt, 1720, accompanied by notes of W. Wessow, Leipzig, 1798-1804, 6 vols. 8vo, did nothing towards a new revision of the text, though it is corrected in many places. The most prizing edition of all the works of Xenophon is that of his own countryman Letronne. This edition is entitled 'Œuvres complètes de Xenophon traduites en Français, accompagnées du texte, de la version Latine, et de notes critiques,' 6 vols. 4to., 1797-1804. There is a seventh edition, 1824, of which (1828) contains the various readings of three MSS.; a second (1814) contains the notices of the MSS., and observations, literary and critical; and the third an Atlas of maps and plans. Gail has kept to the old text, and has made no use of his own discoveries. In the second edition of The Cyropædia, the passages of the key to which he had added a note, are not here printed. The translation of the 'Hellenica,' 'Cyropaedia,' 'Apologeticus,' and 'Anabasis,' is by Diodorus of Sicily, with the additions of a disabled archer, with some few alterations, made, as he says, for he following reason—'I was induced to copy these three versions; but the publisher of one of these versions is then that of this book contains the original of his own (de a”), to avoid all discussion, I made some alterations. There are indexes of the contents of each volume, except the first, which has only a title of the chapters, and is very insufficient,' &c. This is very moderate praise, and it is clear from the fact that in the fifth book alone of the 'Cyropaedia' the diction of Diodorus is so poor that a fresh edition deserves. Letronne published an edition of the various works of Xenophon, except the Hellenica, between 1778 and 1785, in 6 vols. 8vo. Schneider revised this edition: he published in 1818, the 'Hellenica' in 1791; the 'Memorabilia' in 1798; the 'Cyropædia' in 1801; the 'Theophrasti' in 1803; the 'Anabasis' in 1806; and the Political minor works in 1815.

The 'Anabasis,' in seven books, is the work by which Xenophon is best known. It contains the history only of the more properly of two warlike expeditions: the taxervs Memnon, and the retreat of the Greeks who accompanied him. The first book contains the march of four thousand years, from the time when the history of Thucydides ends, B.C. 411, to the battle of Mantinea, B.C. 362. The hypothesis that this history contains some historical truth not otherwise known, is Niebuhr's opinion. The 'Hellenica' have little merit as a history. The author was altogether deficient in that power of reflection and of penetrating to the nature of things, which mark the great works of Thucydides. It is generally a dry narrative of events, and contains little to move or affect, with the exception of a few incidents which are given more with than the usual detail. The parts also are not treated in their due proportions, and many important events are passed over briefly. Thus the only proper historical work of Xenophon, does not entitle him to the praise of being a good historical writer. It may be urged that the work was only a kind of Mémoires pour servir, as some have supposed, but it is to be supposed, that such a man as Xenophon, having the foundation of his model, must have shown a judgment and eloquence and the 'Anabasis.' This is not the case. The object is to show how events are connected and why some of them are successful or failures; and good government. 'Xenophon, throughout this work, is chiefly moral and picturesque, and the outward events are not connected with the moral and intellectual object of the in a suitable manner.
one of the many proofs of his aversion to the usages and the political constitution of his native city. The genuineness of the apologos, or conclusion of the work, has been doubted by some critics. Its object is to show that the Persians had greatly degenerated since the time of Cyrus. The 'Cyropaedia' is one of the most laboured of Xenophon's works, and contains his views on the training of youth. The character of a 'good prince' is an agreeable exposition of principles under the form of a history, and, like Xenophon's other treatises, it contains more of plain practical precepts, founded on observation and supported by good sense, than any profound views. The dialogue 'Hiero' is worthy of a pupil of Socrates. There is an English translation of the 'Cyropaedia' by Maurice Ashley Cоуper.

The 'Agesilicus' (Αγησίλαος) is a panegyric on Xenophon's friend, the Lacedaemonian king, another evidence of his Lacedaemonian proclivities. Cicero (Ad Fam. v. 12) says that he has in this panegyric surpassed all the statues that have been raised in honour of kings. Many modern critics have passed an unfavourable judgment on this work, and some maintain that it is the work of a sagan by the author at an age later. It has been described as a kind of cento made up of passages copied literally from the 'Hellenica' and other works of Xenophon.

The 'Hipparieous' (Ιππαρισσα) is a treatise on the conduct of cavalry, in which Xenophon gives instructions for the choice of cavalry men, and remarks on the duty of a commander of cavalry. There is internal evidence that this treatise was written at Athens, but there are different opinions as to the time when it was composed. The 'Horsemanship' (Χείρομηχανία) was written after the 'Hipparieous', to which reference is made at the end of this treatise. The author says that he has had much experience as a horseman, and is therefore qualified to give instruction to others. He speaks at the beginning of a work with which he is so much of the churchman, he coincides, and he professes to supply some of his omissions. This work is translated into English, and was printed by Henry Denham, London, 1884, 4to.

The 'Cynegeticus' (Κυνηγικά) is a treatise on hunting, a sport which Xenophon was fond of, and which contained some considerable observations. It contains many excellent remarks on dogs, on the various kinds of game, and the mode of taking them. [Arrian.]

The treatises on the Republics of Sparta and Athens were not always recognized as genuine works of Xenophon, but modern writers have adopted this opinion. But there is nothing in them which can be urged against Xenophon's authorship. They show his attachment to Spartan institutions, and his dislike of democracy. There is an English translation of the Republic of Athens, by James Morris, London, 1794, 8vo.

The treatise on the 'Revenues of Athens' (Τιμαι της περιφέρειας) has for its object to show how the revenues of Athens, and especially those derived from the mines, may be increased. The treatise on society and the state has been made subject to the maintenance of the poor citizens and all other purposes, without requiring contributions from the allies and subject states. The matter of this treatise is discussed by Böeckh, in his work on the 'Public Economy of Athens.' This treatise was translated into English by Walter Mapc, 1927, 8vo., and reprinted in Moyle's whole works.

The 'Memorabilia of Socrates,' in four books ('Ἀμνομαζέματα Ὁσκρατείς'), is the chief philosophical work of Xenophon. He defends his master against the charges of his enemies, but interrupting the train of his arguments he introduces Socrates after his fashion as developing and inculcating various moral truths. The tendency of the work is entirely practical, and it may be true, as some writers maintain, that Xenophon has exhibited a multitude of Socrates in manner more conformable to his own notions than in the full sense and spirit of the Socratic method. But Xenophon was a hearer of Socrates, lived for a long time in terms of intimacy with him, and as he was an eyewitness to the memory of his master, and certainly had no pretensions to originality himself as a thinker, we may assume that the matter of the 'Memorabilia' is genuine, that the author has exhibited a portion of the moral and intellectual character of the master, such passages as are such as suited his taste; and that we have in this work as genuine a picture of Socrates as his pupil Xenophon could make. There is an English translation of the 'Memorabilia' and the 'Apology for Socrates,' by Sir J. Fielding. The 'Apology' ('Ἀπολογία Σωκρατείς τοῦ Ὀσκρατέως') is not, as the title imports, the defence which Socrates made on his trial, but it contains the speech which determined him to prefer death rather than humble himself to ask for his life from his prejudiced judges. Vulcain and others do not allow that to be Xenophon's work, the speeches of Ogy and Ocy are worthy of him; but if a man is to lose the discredit of a bad work simply because he has written better, many persons may disown their own books. The 'Apology' is a trivial performance, but Xenophon did write it, and it is an apule in the long run. The 'Symposium,' or 'Banquet of the Philosophers' ('Συμπόσιον'), has for its object the definition of the character of Socrates. It is in the form of a dialogue between Socrates, Antiphanes, Critobulus, and others, at the house of Critias. It contains a subject of love and friendship. It is an ancient tradition that Xenophon wrote this work after the 'Symposium' of Plato, and that he designed to correct the views of Socrates, as given by Plato. Böeckh thinks that Xenophon wrote his 'Symposium' after receiving from Xenophon that he was an admirer of Socrates and that his purpose was to exhibit the ideal of a man in the person of Socrates. Ast is of the same opinion, and thinks that the 'Symposium' is a real work of Xenophon. There is a translation of the 'Symposium' by James Welles, M.D., 1710, and reprinted in 1780.

The 'Iris' (Ηυρίς ή ρανάκτρο) is a dialogue between Hiero, tyrant of Syracuse, and the poet Simonides. The tyrant describes the dangers and vexations incident to the possession of power ('τέρατα') was the title of the work, written for the tranquility of the private man. The poet shows that the tyrant has it in his power to oblige one person or private individuals can, and he offers some suggestions as to the best mode of using power and gain; and to which the public welfare is the end. The 'Iris' has considerable merit, and it is observed that it savours of the school of Socrates more than any other of Xenophon's works. There is a translation of this work attributed to Queen Elizabeth, but no authority on what authority. It first appeared in 1743, 8vo., in 'Miscellaneous Correspondence,' and the title is 'A Translation of a Dialogue out of Xenophon in Greek, between Hiero, a king, and some persons, and Simonides, a poet, as touching the life of a Tyrant.' Another translation also appeared in 1703, 8vo., which is attributed to the Rev. R. Graves, who translated Marcus Antoninus.

The 'Oeconomica' ('Οικονομικά') is a discourse on the management of a household and on agriculture, begun by Socrates, and used by Xenophon. It speaks of Cyrus the Younger, and his love for horses. This passage was written after the death of Cyrus, and Xenophon's work probably belongs to a later period of Xenophon's life, though Socrates is introduced as the author of the panegyric of Cyrus. It is a confirmation of the authorship of the 'Anaebasis' being rightly assigned to Xenophon, that he speaks of Cyrus, his character, and the in the same manner, and almost in the same words, as he is used in 'Anaebasis,' 'Oeconomica,' c. 1, and it may be supposed that the dialogue was written between Ischomachus and his wife on the duty of a wife, which consists in the proper management of the house; it is the husband's business to look after the financial affairs, and to apply it to the uses of the house. In the husband's employment, as here represented, is agreeable in a country where slaves are the labourers; but the part of married life will suit every condition. There is an opinion from this excellent writer that the husband's employment is at home; that the object of marriage is the happiness of the husband and wife, the prosecution of chil-
several English translations. The first is by Gentian Hervet, London, 1534, 8vo., which has been reprinted several times. There is also a translation by Robert Bradley, F.R.S., London, 1727, 8vo.

The general character of Xenophon may be estimated from this brief sketch of his life and writings. Before we leap upon him all the abuse which some modern writers have done, we ought to have the facts of his life with sufficient minuteness to enable us to judge of every part of it. He did not like the democracy of his native city, and he may have been glad of the opportunity of leaving Athens which the invitation of Proxenus offered. In Hellenic affairs, he was one of the leaders of the expedition of Cyrus; though it is very probable that he was blamed for it at Athens, and supposed to have been well acquainted with the design of Cyrus from the first, and it is certain that he accompanied the campaign of Aristobulus, the Lacedaemonian, after the campaign in Thrace, was well calculated to add to the jealousy of the Athenians, and his native city cannot be charged with more than her usual severity in banishing him for his part in the experiment. It is subhanced to fit the turbulence of the Athenians. He was a religious man, no, as we are now pleased to term it, a superstitious man. He believed in the religion of his country, and was scrupulous in preserving and enforcing the observance of the sacred ceremonies. He did not, however, give up his studies and upon them as manifestations of the deity. His philosophy was the practical: it had reference to actual life, and in all practical matters and everything that concerns the ordinary conduct of human life he shows good sense and feeling. He was an admirable man, who could express with propriety and in an agreeable manner whatever he had to say. As a writer he deserves the praise of perspicuity and ease, and for these qualities he has in all ages been justly admired. As an historian he is infinitely below Thucydides; he had no depth of reflection, no great insight into the fundamental principles of society. His 'Hellenica,' his only historical effort, would not have preserved his name, except for the importance of the narratives, and for the interest of many of the historical records. His 'Anabasis' derives its interest from the circumstances of that memorable retreat, and the name of Xenophon is thus connected with an event which exposed to the Greeks the weakness of the Persian empire, and by which they became familiar with the genius of the genius of men and the triumphs of Alexander. The narrative of the retreat may be compared with Herodotus for the minute detail of well selected facts, the simplicity of the narration, and the general clearness of the whole. But it is the narrative which is the best of the work, not the text, and in some cases the author's memory or his notes may have deceived him. The 'Anabasis' is a work of the kind which few men have had the opportunity of writing, and there is no work in any language in which personal adventure and the conduct of a race are treated with more harmoniously and agreeably combined.

The works of Xenophon, which are called philosophical, should be entitled treatises on practical ethics and econo-
These observations occur in the first series of Mr. Swainson's Zoological Illustrations, and in his Classification of Birds the genus is, in effect, immediately followed by the subfamily of Sittinae, or Nuthatches.

XEREZ, or JEREZ, the name of a mountain in Portugal, and of several towns in Spain and South America. Xerez, a small town among the mountains, 31 miles east of Granada. There are iron-mines in the vicinity, and some considerable iron-works in the town. Population, in 1833, 1900.

XEREZ DE BADAJOZ, more generally known by the name of XEREZ DE LOS CABALLEROS, a town of Estremadura, 34 miles south of Badajoz. Population, in 1833, 9000. It is a walled town, and contained before the last revolution nine convents and two hospitals. There is a considerable trade in cattle, and manufactories of cloth, leather, hats, pottery, and soap. There are silver and sulphur mines in the neighbourhood. The town is called De los Caballeros from its having belonged at one time to the Templars. Basco Nuñez de Balbon, the first who crossed the isthmus of Central America to the Pacific, was a native of Xerez de los Caballeros.

XEREZ DE LA FRONTERA, the name of a town situated in 36° 41' N. lat. and 6° 7' W. long. It is about a mile and a half distant from the right bank of the Guadalete, on the high road from Cadiz to Seville; 12 miles north-east of the former city, and 463 miles south-south-east of the latter. The population was understood to amount to 31,000 souls in 1833. The old town, inclosed within the walls, has narrow and crooked streets; those of the new town, outside, are broad and regular. There are eight parish churches. Before the last revolution there were eleven convents for men and seven for women. There are in the town one college, two free-schools, four hospitals, one hospital for orphans and another for foundlings, and a public granary. There are no manufactories, except for articles consumed by the inhabitants. The only trade of Xerez is in the wine of the surrounding district, the well-known Sherry, of which 450,000 arrobas have been produced in a good year. The inferior wines are consumed in the district; the sorts able to bear exportation are almost all sent to England. The magazines of the wine-merchants are remarkable for their extent. The olive was formerly cultivated to a great extent in the neighbourhood of Xerez, but this branch of agricultural industry has declined of late years. Considerable attention is paid to keeping up the race of Andalusian horses. The salt-works and sulphur springs of Jiganes are 31 miles south-east from the town, on the same bank of the Guadalete. Xerez received the distinctive epithet dela Fe etc. to distinguish it from other towns of the same name in the interior. Mihanò mentions that the name Xerez was believed to be a Moorish corruption of the name of one of the tribes which inhabited the district in the time of the Romans. Xerez de la Frontera is supplied by some to stand on the site of the ancient Asta Regia, others that place that at Meza de Asta, between the two three miles distant. Thomas de Moda, general of cavalry, was a native of Xerez.

The name of Xerez de la Frontera has been given to 1. a small town of Brazil, in the province of Rio Grande, to the east of Paraguay, now in the 2. a small town of Central America, in the states of Durus and district of Tegucipul, on the river Xerez, not from its mouth in the Gulf of Fonseca, near a carara; but now exhausted gold-mine in a country which produces much coca and indigo.

(Mihanò, Diccionario Geograpfo-estadistico de España y Portugal; Dictionnaire Geographique Universel.)

XERXES I. (379-479 B.C.), king of Persia, succeeded to the throne his father Darius, the son of Hystaspes. Darius was raised to the throne, Darius had three sons by his a daughter of Gobryas, of whom the eldest was Arab, zanes. After he became king, he had four sons by Shah the daughter of Cyrus, of whom Xerxes was the son. Darius appointed Xerxes his successor.

Darius died during his preparations for war against the Egyptians and the Athenians. In the second year of his father's death, Xerxes marched against Egypt, which had revolted in the time of Darius. He reduced to obedience and gave the administration of his brother Aesmenehis. He next employed himself for two full years in making preparations for his Greek expedition. The immense force which was assembled for this purpose was collected from every part of the Persian dominions. The fleet was supplied from Egypt, Cypria, Cilicia, and other maritime parts which were within the limits of the Persian government. Xerxes also entered into negotiations with the Carthaginians, who engaged to attack the Greek cities of Sicily and Italy, while the Persian king invaded Greece.

In the autumn of B.C. 481, Xerxes arrived at Sardis, capital of the Persians in the west, and he wintered there. In the spring he advanced to the Hellespont with all his forces, and encamped at Abydos, which was the first bridge that was made was destroyed by a storm which the king ordered that three hundred boats of the lash should be inflicted on the rebellious Hellespont. The superintendents of the work had their heads cut off out of their pains. The bridge was never built, which is minutely described by Herodotus (vii. 36). Xerxes army was seven whole days and nights in crossing to bridge from Abydos on the Asiatic to the European shore. The marsh was continued from the Hellespont through the Thracian Chersonese. The fleet did not enter the Hellespont, but took a western course along the Thracian coast. On arriving at the plain of Doriseus, which is near the sea and is traversed by the river Hebrus, Xerxes numbered his force. The ships took their station close to the shore. The infant Xerxes was sent to the Hellespont, and the mother was ascertained not by tale, but by measure; an inch was formed large enough to contain ten thousand men, and it was filled and emptied till the whole army was measured. (Herod., vii. 37.) After being thus arranged according to nations. Herodotus has left one of the most curious historical records that exists in his description of the various nations that composed this mighty force, and of their military equipment (vii. 61, 62). The cavalry amounted to 80,000 horse, and it was a grand army. The war-ships (πόλεμοι) were 1207. Herodotus has enumerated the several nations which supplied and manned the ships (vii. 89). From Doriseus Xerxes continued his march through Thrace. Herodotus, who has gone over the place, has described the march of the army with great distinctness. On reaching the isthmus which connects the mountain peninsula of Athos with the main land, the fleet avoided the circumnavigation which had
proved so dangerous to Mardonius in b.c. 492, by passing through the canal of Athos. This canal had been constructed by the Persians. It is described by Herodotus (vii. 22; see the article Axios). From Axios near the mouth of the Axios, the army marched to Thessalonica, now Saloniki, on the Axios. The fleet at last reached Sepias on the coast of Magnesia, in Thessaly, and there met the troops and provisions for Persians, Medes, and Sacae in each of them. The Persian commanders (περιπετευόμενοι), which Herodotus had not included in his former enumeration, were 3000, and, reckoning 80 to each, there would be 240,000 men in them. Thus the whole naval force held amount to 977,610, and the whole armament, both military and naval, would amount to 2,917,610 men, which includes 20,000 men, not before enumerated, camel-drivers and drivers of Libyan chariots. This is the amount of the force which passed over from Asia, and it amounts in all to the seven followers, the vessels that carried provisions, and the men on board these vessels. To this must be added 120 European vessels, containing 20,400 men, that joined the navy of Xerxes. The forces supplied by the Thracian tribes amounted from 20,000 to 500,000 men; thus the whole number of fighting men was 2,641,110. Herodotus considers that all the followers and those in the provision vessels would be more than the fighting men, but we will suppose them to be equal. Thus the whole naval force, according to Herodotus, conducted so many as far as Sepias and Thermopylae.

As to the number of women who followed to cook the provisions, and of eunuches and eunuchs, no one could tell the amount, nor that of the baggage of burden. The first calamity that befell this might have increased the number in the neighbourhood of Sepias, which caused great loss. At Artemisium there was an encounter between some of the Persian ships and those of the Greeks, in which the former made their escape from the latter. Scylla, finally, found itself stopped at the narrow pass of Thermopylae by Leonidas and his gallant band. The Persians sustained a heavy loss in endeavouring to force the pass, and they could not effect it till Epitaleis, a Mesian, showed the Persians the way to the rear of the Persians. Leonidas, who fell with his brave men after an obstinate conflict.

In the sea-fights off Artemisium, the Persians again sustained loss (Herod., viii. 11, &c.). The Persian army now grew in numbers, and they advanced before them. On entering Boeotia, they were joined by the Boeotians. A detachment was sent by Xerxes to attack the temple of Delphi, but the Persians sustained a signal defeat, and those who survived escaped into Boeotia. The Athenians marched to Artemisium, and joined the Persians to the island of Salamis, off the coast of Attica (Herod., viii. 40). The Athenians sent their females and slaves to Troezen, Aligia, and Salamin, and left their city to the mercy of the Persians, who, after burning Thespiae and Plataea, the only town in Boeotia that did not join them, entered Athens and destroyed it also. The Persians had occupied three months in their progress from the Hellespont to Athens. The fleet of Xerxes sailed from Histiaea in Asia, and, after the four-fifths of the Persians continued three days reached Phalerum in Attica. Notwithstanding the losses of the Persians, Herodotus considers that the land and sea force which reached Attica was as large as that which had reached Sepias and Thermopylae. The Graces were seen total is 3,500,000, and Herodotus gives 3,000,000 in the narrow passage between Salamis and the mainland. Xerxes, having resolved on an engagement, took his station on the shore of the mainland under Mount Egea, opposite to Salamis; and here he had the misfortune to see his mighty armament defeated and dispersed (Salamis; Thermopylae). B.c. 480. Shortly after the battle he retreated to the Hellespont, which he reached in forty-five days, and crossed over into Asia. He was attended as far as the Hellespont by Artabazus and Kersaspes. The Great King, who was left in Greece with the army, was defeated in the following year, B.c. 479, at Plataea in Boeotia by the combined Greeks, and on the same day the Greeks gained another victory over the Persians at Mycale in Ionia. This was followed by the siege and capture of Sestos on the Hellespont (b.c. 478), an event with which the history of Herodotus ends. It is said by Herodotus (viii. 106), that on the very day of the battle of Salamis, Gelon and Theron defeated, in Sicily, Hamilcar and his Carthaginian army, though the Greeks would have been successful both on land and at sea.

The Greeks continued the war against the Persians after the capture of Sestos. Little more is known of the personal history of Xerxes. He was murdered (b.c. 465) by Artabanus, and succeeded by his son Artaxerxes, called by the Greeks the Longimanus (Χαλκονόμης). Xerxes, it is said, by Herodotus, was cruel, vain, cowardly, and of feeble understanding. The great event of his reign is the invasion of Greece with his enormous army and fleet, of which we have in Herodotus (books vii.-ix.) a most minute account. The historian lived soon enough after the event to be able to collect trustworthy materials, and that he spared no pains is evident from his work. Much has been said on the large numbers of the arm and navy of Xerxes, as stated by Herodotus; but, incredible as they seem at first sight, an attentive consideration of the whole narrative of the historian will remove much of the doubt; at any rate, if the numbers are exaggerated, it is clear that Herodotus only followed his authorities.

XERXES II., king of Persia, succeeded his father Artaxerxes, the Longimanus, the Longimanus, in b.c. 465. He was assassinated after a short reign of a year, or, according to some accounts, two months, by Sogdianus, who succeeded him.

XILEMENIA, a genus of plants belonging to the natural order Oleanaceae. It was named in honour of Francis Xilemenius, a Spanish botanist, who gathered the plants and animals of New Spain. The species of this genus are trees or shrubs, usually armed with spines, and having alternate, ovate, or lanceolate exstipulate leaves. The calyx is small, permanent, 4-celled, hairy inside and covered at the base, valvate in uniovate structure, the stamens eight, with capillary filaments; the anthers 2-celled, fixed by the base; the ovary 4-celled and 4-seeded; the fruit a drupe, with one cell and a single seed. There are many species, some natives of America; the most remarkable is the X. americana. It has spiny branches, oblong entire leaves, the peduncles axillary and umbellate, the lower ones changed into spines. This plant is a shrub, attaining a height of eight feet, and is a native of South America. It produces a yellow fruit about the size of a pigeon's egg, which has a sweet acid taste, and is eaten by the natives. The flowers are small, of a greenish yellow colour inside, and sweet-scented. De Candolle describes two varieties: one, ovate oval, leaves prostrate, the other, in Guiana, with oblong leaves. (Don's Miller; Burnett's Outline.)

XILEMENIA, CARDINAL [Cissus].

XIPHIAS (έξιφιας), a fish, an inhabitant of the Mediterranean and Atlantic, occasionally visiting our coast, is a fish of the mackerel tribe, remarkable for its elongated upper jaw, which forms a sword-like weapon, whence its name. It measures from 10 to 15 feet in length. Its body is lengthened and covered with minute scales, the sword-forming flos of its length. On its back it bears a single long elevated dorsal fin. There are no central fins. The tail is keeled. The lower jaw is sharp; the mouth without teeth. The upper part of the fish is bluish black merging into silver below. The sword-fish is said to attack the whale, wounding it with its beak. There are many well authenticated instances of the planks of ships being perforated by the upper jaw of this powerful creature, which it has been said sometimes mistaken for the whole. Specimens of ship's timbers penetrated by its sword are preserved in many mansions. The Xiphas is mentioned by Aristotle (Hist. Anim., viii. 10), who notices the fact of its being used by fishers as food to be good eating. When very young the body is covered with small tubercles, which disappear before it attains the length of three feet. (See Yearell's British Fishes; and Cuvier and Valenciennes's Hist. Nat. des Poissons, vol. viii.)

XIPHIAS, a name for the constellation Dorado.

XIPHILINUS, JOANNES (Euphrasius), Patriarch of Constantinople, was of a noble family of Trebizond.
1066 he was made patriarch of Constantinople; he died in 1075. This Xiphilinus has often been confounded with his nephew. He is the author of an 'Oration on the Adoration of the Cross,' which was first published, in Greek and with a Latin version, in Greuter's work on the Cross, Ingolstadt, 1616, fol. Some other works of less importance are attributed to him, among which some Constitutions on matters of ecclesiastical discipline, two of which refer to betrothment, and are in the 'Jus Graeco-Romanum' of Leunclavius.

JOANNES, of Trapani (Tribizond), was the nephew of the Patriarch Xiphilinus. At the command of the emperor Michael Ducas, whose reign ended A.D. 1070, he made an Epitome of the history of Dion Cassius. The Epitome, as we now have it, commences at book, and dates down to the reign of Alexander Severus, A.D. 235. His work is not distributed like the original, but is divided into sections (γιγαντα), each of which comprises the history of an emperor. We can judge of his work by comparing it with those parts of Dion which are extant. He generally keeps to the expression of his author, but he omits what he considers not essential to the narrative. He has also generally omitted to mention the consuls, who are always recorded in the extant books of Dion, and thus he has done much towards confusing the chronology of the period. Like all other epitomes, it destroys the character of the original work; and it is worthless except as supplying the main historical facts of the larger part of Dion which is lost. Xiphilinus was a Christian.

The first edition of Xiphilinus was by R. Stephens, Paris, 1651, 4to, and these are the same as the second edition, the Latin version of G. Blanc. The edition of H. Stephens appeared in 1592, fol., with Blanc's translation, revised by Xylander. There is an English translation by Manning, London, 1704, Svo., of the Epitome of Xiphilinus.

XIPHORHYNCHUS, written by Mr. Swainson Ziphorhynchus, a genus of Certhiaires, or True creepers, according to that zoologist.

Subgeneric Character.—Bill lengthened, slender; both maxillaries considerably curved, typically falcated; the sides compressed from the nostrils. Wings rather lengthened; the second quill hardly shorter than the third. Tarsus short, slender, of equal length with the two external toes. Hinder toe shorter than the tarsus. Tongue cartilaginous, flat, as long as the bill.

Example, Xiphorhynchus procurvus.

XIPHOSOMA, Fitzinger's name for a genus of Serpents.

Cuvier remarks that his fifth section of the great genus Boa consists of those species which want fossas or little pits on the jaws, and have the muzzle furnished with slightly prominent plates cut obliquely from behind forwards, and truncate at the end so as to terminate in a wedge. Their body is very thickly covered, and surrounded by their back and sides. He observes that these are inhabitants of the East Indies, and may afford ground for including them in a distinct subgenus.

The species which he quotes are the Boa carinata of Schneider, or osculata of Oppel; and the Boa vipera of Shaw (Russel, pl. iv.). These two subdivisions form, he adds, the genus Xiphosoma of Fitzinger, Cenchris of Gray.

XIPHOSURA, the name by which M. Milne Edwards designates a subclase of crustaceans, which he arranges at the end of his system and next to the Scolar Turacaces.

M. Milne Edwards observes that the singular animals which compose this small group are so remote from all the other crustaceans, that some naturalists have been inclined to exclude them altogether from that class, and arrange them among the Arachnida, and that in entirely rejecting this opinion it becomes necessary to isolate them as much as possible, and to form a particular subclass, which is connected with that of the Branchiopoda and that of the Tailorcrabs, but is distinguished from those crustaceans and all the other animals of the same class by the character of its organisation. The natural position of these Xiphosures should, in the opinion of M. Milne Edwards, have been near the Branchiopods, but he has preferred the place which he has assigned to them, in order that he might not break the connection which unites all the Maxillated Crustaceans.

* They are circular; see post, p. 608. • Seven.
a claw with equal branches: this is sometimes the same in the male; but in some species of Limulus this sort of hand is wanting in the feet of the second and third pair, the prolongation representing the immovable finger not being developed. The sixth pair of feet differs much from the preceding: their basal joint is larger, terminates on the internal side in a toothed surface bearing some resemblance to that of a grinding mandible, and carries at its external angle a fabeliform appendage. Sometimes here exists a small lamellar appendage at the extremity of the fourth joint, and the next joint carries its anterior border many of those subfoliaceous and elongated laminae which hide nearly the succeeding joint, as well as the small didactylous hand which terminates it. Lastly, between the base of these feet, at the posterior part of the horns, are two small lamellar pieces which are obtuse at their ends and furnished with spines, which seem to be the edges of a seventh pair of limbs. The abdomen is hollowed out into a rather deep cavity, which is very analogous to that in Sphaeroma and many other Isopoda. In his cavity are lodged the abdominal false feet and the branchia fixed to their posterior surface. There are six pairs of these members, but the most anterior are not distinct and are united on the median line, as in the Nereis or Amphiura, as a large foliaceous and nearly circular valve, but in the next anterior, and which entirely covers the succeeding false feet in each half of this appendage are to be distinguished one or two basal pieces and two terminal laminae, which represent the branches which ordinarily terminate these organs: one of these pieces, situated near the median line, is small, and separated from that of the opposite side by a fissure; the other is very large and, finally, on the superior or posterior surface of this first pair of false feet the two orifices of generation are found. The succeeding false feet are equally foliaceous, and united on the median line throughout the whole extent of their basal piece; but the two branches which terminate each of these organs are free and more developed. The internal branch is composed of two joints, the first of which is quadrilateral and elongated, the second foliaceous and oval. The external branch is represented by a very wide lamina, which is rounded externally, and resembles that of the operculum. The two external thirds of the posterior surface of the basal portion of these limbs are occupied by a great gill formed of a considerable number of laminae, or rather of cutaneous folds, disposed transversely, and piled one on the other like the leaves of a book. These leaves adhere to the false feet throughout the length of their base or anterior border, and are free in the rest of their extent. They are triangular, with a curved border, and increase in size from the upper extremity of the branch to its base, so as to give to this last the form of a pyramid, the posterior ridge of which is curved, the two free surfaces convex, and the base rounded. The free edge of each leaf is furnished with a small hony band, destined to sustain it, but throughout the rest of their extent these folds are membranous: there are about one hundred and fifty of them in each of the first pair of gills, and a few less in the succeeding gills; the last has only about one hundred and thirty.

Limulus Moluccorum, reduced one-fourth, and seen from above.
Position of the two smooth eyes; b, lateral compound eyes; c, respiratory apertures.

The mouth, situated towards the posterior third of the lower surface of the cephalothoracic backer, is surrounded, as has already been noticed, by the feet, the basillary joint or lamina, which is armed with spines or
teeth, and disposed so as to serve for the work of mastication. This aperture is infundibuliform, and continued with the digestive tube, which is directed at first directly forward, then curves upwards and backwards, and proceeds in a direct line to the extremity of the abdominal bucker, where it presents anew a small curvature in its course to the anus. The first portion of this canal, directed forwards and upwards, the intestine, constitutes the occluded tube; it is narrow, rather long, and furnished internally with longitudinal plait. The stomach is represented by the curved and anterior portion of this same tube; it is small and directed vertically; its walls are very fleshly, and puckered (trabeculate), internally; an internal fleshy, feathery, and from the oesophagus, and its pyloric extremity advances in form of a cone in the cavity of the intestine, so as to constitute a species of funnel. The third portion of the intestinal tube occupies nearly the whole length of the body, and represents the duodenum, or cylindrical ventricle: it is cylindrical, straight, and has towards its two extremities some transverse folds of the internal membrane, and more or less projecting papillae. On each side a little above the level of the mouth, are two small circular orifices, which belong to the biliary apparatus, and its posterior extremity is suddenly contracted in order to its continuation with the fourth portion of the digestive tube, which may be considered as the intestina rectum. It is very short, plaited longitudinally, and is directed downwards and externally in order to reach the anus, which is situated in front of the insertion of the caudal sword. The liver fills in the cephalo-thorax the space situated between the intestine and the muscles of the foot; it extends also into the median chamber, and is composed of two orifices, which are continued with the excretory conduits, the four trunks of which open in the anterior part of the duodenum.

The heart bears much resemblance to that of the Spiders, (Struxostoros, p. 83.) It is a long dorsal vessel with fleshy walls, which present on each side several transverse apertures furnished with valves, and which give origin to various arteries.

The nervous system consists in a medullary ring which surrounds the oesophagus; it gives origin to the cephalo-thoracic nerves, and is continued backwards with a stout chord, from the posterior part of which the abdominal nerves spring.

The organs of generation open externally by the apertures of the base of the first pair of false feet. In the females these orifices each communicate with an oviduct, which when arrived in the thorax is divided into two branches, the ramifications of which constitute the ovary and embrace the liver. In the male, in place of the ovary, there exists a spermathecal organ. (Histoire Naturelle des Crustacés, 1840.)

Such is the statement given by M. Milne Edwards of the organization of this highly interesting form.

But, in his "Human thoracic Lectures" (1843), he has touched upon certain points, for whose detailed illustration zoologists are anxiously looking, especially with regard to the development of the nervous system.

The Professor states that the Xiphosura, typified by the Limulus, or Molucca crab, have the head and thorax more completely blended together than in the true crabs, which resemble in the general form of the body; but that they are peculiarly distinguished from all other crustacea by having the office of jaws performed by the first joint of the thorax, which Surrounds the mouth. The cephalo-thoracic segment is, he remarks, protected above and laterally by an expanded crescentic shield obscurer divided by two longitudinal impressions into three lobes, supporting the organs of vision on their highest part. The body of the segments of the body of the limbs is also divided into three lobes, which are blended, he observes, into three trilobate cylindric piece, their original separation being indicated by the branchial fissures, and the number of the segments by the number of the trilobate piece. When the abdomen is also divided, he adds, into three trilobate cylindric piece, with the original separation being indicated by the branchial fissures, and the number of the segments by the number of the trilobate piece.

The termination of the intestine beneath the last segment of the second division of the body of the Limulus presents, in Professor Owen's opinion, and correctly, as we think, that division to answer to the abdomen in the Japanese carp, but admitting the immensely large eye of the same segment, not more than sixteen segments can, he remarks, be determined by the appendages to enter into the composition of the entire crust of the Limulus, including the sword-shaped appendage, which is analogie in the Japanese carp, to the last post-segment of the higher crustacea, and consists of a single podal segment.

Professor Owen then adverts to the small Entomostoma, in which the number of the thoracic and abdominal segments is less than that in the Limulus, and adduces as an example the Branchipus stagnalis (Brachiopoda, p. 343), which has eleven thoracic segments or nine abdominal or caudal rings, besides a distinct head protected by a thoracic shield. In the Isora, in which the head is very indicated, and the abdomen is divided among the Entomostoma, to the extent and in the form of a broad shell enveloping the whole body, the number of thoracic and abdominal segments exceeds that in the Limulus, or shows more than one podal segment.

These and other observations of the Professor shows the segments of the crustacea are highly interesting when considered with reference to a race of that class who live in water but have no living analogue; and he thus points out the value of this part of their construction as applicable to the subject:

'In the species of Entomostoma and Malacostraca in the number of the segments of the body is of the first importance in determining the affinities of the class. Amongst the various remarkable animals which were almost the sole representatives of the present class in the periods which intervened between the deposition of the earliest fossiliferous strata to the origin of the coal formation. They appear to have been abundant. Of these, the parts of the body only of their body-segments is yet known; but the second species, which is united together to form a distinct head, thorax, abdomen or tail. The head is formed by a large circular or crescent-shaped shield; the thorax consists of the second to fifteen segments, of which each bears a row of fleshy processes. The abdomen are very similar to each other, and gradually increase in size. They are divided by two longitudinal rows into three lobes. The head supports a pair of compound eyes situated near the sides, like the large pair of eyes in the Limulus, which they resemble in size and structure.

'Malacostraca are divided into two groups, according to the attachment of the eyes: those with immovable sessile eyes form the Epithlotos; those with pedunculated eyes, the Podophthalma. In the latter the eyes are directed to the sides, and the second to fifteen segments of the body are divided into three lobes. The Malacostraca resemble the Tribolites in the non-confluence and uniformity of the segments of the abdomen, which in the Limulus is divided into three lobes. Bopyrus, have the tergal area of the segments divided, but they exceed not the characteristic number in the Malacostraca, and the seven rings of the thorax are only indicated in each by the seven pairs of antennae which they support, although these are very small in size and structure. The seven to fifteen and seven abdomen segments are more distinctly characterized.'

With regard to the nervous system and sense organs, Professor Owen has alluded to Cuvier's description of the par of the organization in the common crab. Mr. Snell illustrated dissections and beautiful plates of the eyes, and the able display of the corresponding structures in the Milia by Audouin and Edwards, observations on the molluscous and crustacea. The head is also divided into three lobes, the outer lobe of which bears the compound eyes, and the second division is completely enveloped by the cuticle, and the third division is connected with the posterior division of the nervous system, but with interesting modifications, has been described by Professor van der Hoeven in the Limulus, or King-crab, the most gigantic form of the Entomostracous tribe, and probably the only existing genus from which we may gain a glimpse into the organization of the extinct Tribolitie crustacea. Professor Owen was therefore induced to publish the well-preserved specimens of Limulus, given to the College of Surgeons in London, by Mr. Booth, of Boston. Bopyrus, in the College, whose beautiful dissections and preparative will be found in the museum of the College. The details of the nervous system so displayed, together with the

* Boo, Longman & Co.
of the anatomy of the Limulus, will be published by the council of the college.

Professor Owen observes in his lectures that the large lateral compound eyes of this crustacean are sessile. The cornea, he proceeds to state, is divided into a considerable number of small circumscribed masses of food to the microscope, to an ocellus; and the optic nerve, after its long course as a simple chord without forming a ganglion, divides near the eye into a pene of fine filaments, which severally receive the impressions from their respective ocelli, of the aggregate of which the lateral compound eye is composed:

the two small simple median eyes, which are almost in contact, command the space before the head which is out of the range of the large compound eye. Each simple eye, he further informs us, receives its distinct nerve from the median eye or the lateral eye, according as which of them is nearer to the position of the respective four eyes; this being the reason why a corresponding nerve, with four eyes severally on it, is only four cilia long.

In the sessile eyes of the Edriopthalmus, as, for example, in the Serolina, says Professor Owen in continuation, the inner layer only of the cornea is divided into hexagonal facets, corresponding with the number of the rays, in which the lenses of the compound eye are.

The Tribolites the cornea presents the same subdivided surface as in the Limulus; and the position of the two eyes agrees with that of the corresponding compound pair in the larger crustaceans, Entomostraca, and so in the Tribolites. In the Anasopus caudatus the cornea is divided into at least 400 compartments, each supporting a circular prominence; its general form is that of a frustum of a cone incomplete towards the middle line, and with its base placed above, as has already been observed in other directions, that where the distinct vision of one eye causes that of the other begins. In the mandibulates crustaceans, distinguished by having their compound eyes supported on movable peduncles, the form of the corneal acetabulum is somewhat similar in the, for example, in the hermit and common crabs. There is a conical crystalline lens behind each facet imbedded in a small fleshy humour, upon which the optic filament expands, and each ocellus is lodged in a pigmental cell, which likewise expands in the same manner when the cornea is forced together by the passage of the optic nerve. In the Podophthalmous Crustacea there is generally a spacious furrow or groove in the head, in which the lenses of the compound eye are, and which is termed the orbit. In one or two species the eye-stalks project beyond the margins of the carapace.

The same acute observer, speaking of the organs of vision of these large crustaceans, which were probably co- existed with Tribolites, remarks that the Limuli differ from all other ringed crustaceans in their organs of mastectomy, which are modified hard joints of the five posterior pairs of legs: the first pair is the leg, the first pair is the leg, rudimentary in both our lepidopods, and the median part of the body is to be made by the entomostraceous genus pure in which however the labium is truncated. A few of the largest organized crustaceans, as Callinus, Nymphon, and Phrygonocon, obtain their aliment, he adds, like the crabs.

After referring to the structure of the mouth in the Falocrosteus Crustacea, and pointing out that the alimentary canal is most simple in the Suctoral Crustacea, which it presents no noticeable difference from that in the head, but becomes more of the horizontal is localized and better developed, he thus describes this part of the organization in Limulus —

In the Limulus the mouth is nearly in the centre of the inferior surface of the great cephalo-thoracic appendages. It consists in a small chitinous tube which is simple and does not continue forward, and expands into a stomach, which is situated at the anterior part of the head. This organ is abruptly bent upon itself upwards and backwards, and is continued by a gradual diminution of diameter, as appears from the internal view, into the intestine, with a slight vertical bend, to the base of the penultimate abdominal segment. When we examine the interior of the alimentary tract, the distinction between the stomach and intestine is effected, as Van der Hoeven has shown, by a conical valvarly pylorus, which projects into the commencement of the intestine. The stomach is lined by a very dense and corrugated horn membrane. The hepatic mass, which, with the generative glands, fills the greater part of the cephalo-thoracic appendages, pours its secretion into the commencement of the intestine by two ducts on each side. (Prep. No. 477, A.)

In the heart of the Crustacea, Professor Owen remarks, we may trace a gradational series of forms, from the bivalved median dorsal vessel, to the short, broad, and compact muscular ventricle in the lobster and the crab. In all the Crustacea, he reminds us, as in all the other articulate animals, the heart is situated immediately beneath the skin of the back, above the intestinal tube, and is retained in situ bisecting the body. In most of the species, the lower, elongated, slender, many-jointed species of the Edriopthalmous Crustacea the heart, he observes, presents its vesiform character: it is broadest and most compact in the crab.

In this series, continues Professor Owen, we may trace a general correspondence in the progressive development of the vascular as of the nervous system, concomitant with the concentration of the external segments, and the progressive compactness in the form of the entire body. But there is a remarkable exception to this concomitant progress in the Limulus, indicative, with the general condition of the instruments of locomotion and respiration, of the essentially inferior grade of organization of that genus, and which observes more especially the last remnant of the once extensive group of Tribolite Crustacea which swarmed in the seas of the antediluvian periods of the earth's history.

We have seen, continues the Professor, in the compact and broad existing representatives of the Gigas, of the Entomostracous Crustacea, that the nerve-mass exhibits a concentration of its principal central mass around the mouth, analogous to the condition in the common crab, but with a ganglion large double chord continuing from it. The heart however continues to retain its independent character, distinctly formed as a series of tubes, into which the same degree of concentration: it remains an elongated fusiform tube, extending parallel with the intestine from the pylorus to the rectum: it is contained in a pericardium with thin membranous walls, formed by the central sinus of the venous system, and it receives the blood from that sinus and from the branchial veins by a series of from seven to ten lateral vertical slits, defended by valves as in the higher crustacea.

An aortic trunk proceeds from each artery through the notch of this heart, the arteries, which, as the aortic trunk, divides and immediately divides into three branches. The middle and smallest branch passes forwards to the anterior edge of the cephalic shield, following the curve of its middle line, and supplying the small median ocelli in its course. The largest branch arches round to the side of the stomach and the esophagus, giving branches to both those parts and to the intestine, and becoming intimately united with the neuromerium of the cephalopagous nervous collar. They unite at the posterior part of that collar, and form a single vessel, which accompanies the abdominal nervous ganglion chord to its posterior bifurcation, where the vessel again divides. Throughout all this course the arterial is so closely connected with the nervous system as to be scarcely separable or distinguishable from it. The branches of both the arterial and the nervous trunks, which accompany each other, may be defined and studied apart.

The posterior series is chiefly destined for the support of the sword-like tail of the Limulus: the final part of its great cephalo-thoracic appendages, which is fixed to the strong inflections of that appendage. The arterial is mixed with the venous blood in the heart, and is propelled in that mixed condition throughout the body, in the Limulus as in the lobster.

With regard to the reproductive apparatus, Professor Owen observes that most of the small Entomostracous carry the impregnated ovum in appended ovicases, like those of the Lernae. These sacs are not developed, he remarks, in the Limulus, which also differs from the smaller Entomostracous inasmuch as the ovarian mass is the ovicase and processes with those of the liver: the oviducts, he adds, form more frequent communications with each other than in the higher crustacea, but ultimately terminate, like the vasa deferentia, by two distinct but coalescent orifices.

* Van der Hoeven, p. 12, f. 9.
on the back part of the first abdominal lamelliform appendage.

**Metamorphosis.**

M. Milne Edwards has shown that the Xiphosures undergo in their youth considerable changes of form. At first there is no sword-like or styliiform tail, which in the adult Limulus equals, at least, the rest of the body in length; their abdominal bucculae are rounded posteriorly, and the last pairs of false feet are not developed. M. Milne Edwards observed that this is true of the embryos on the point of exclusion from the egg, which period the abdomen supports only three pairs of appendages.

**Geographical Distribution and Habits.**

The Xiphosures inhabit the sea, and sometimes come upon the sandy beaches. They are found in the Indian and Japanese seas, and in the Atlantic, on the coasts of North America; but they do not appear to have a higher range than the 44th degree of N. lat., and seem confined to the northern hemisphere. Their food consists of animal substances; and when stranded, they often bury themselves in the sand as a protection against the heat of the sun, which is soon fatal to them.

**Arrangement.**

The only genus is Limulus. Müller.

M. Milne Edwards remarks that Leach, it is true, has restricted this generic name to those species the whole of whose appendages are lamelliform, and has proposed a new genus, under the designation of Tachypleus, for those whose anterior feet are monadactylous; but, he observes, it is now well known that this last character is only met with in the male of certain Limuli, and does not coincide with other peculiarities of an important character, so that it does not appear a sufficient basis on which to found a generic division. M. Milne Edwards thus arranges the only recent species known, five in number.

1. Species whose second and third pairs of jaw-feet (first pairs of Latreille) are monadactylous in the male, and in which the movable spines of the lateral border of the abdomen are of two sorts, namely, very long and very short.

**Limulus moluccanus.**—Description.—Cephalo-thoracic bucculae regularly rounded anteriorly in both sexes, and above showing three rows of small spiniform points, situated one on the median crest, the others on the crests which separate the occipital region from the lateral regions; the posterior and lateral borders of the abdomen finely dentitiate. The abdominal buccula smooth above, and terminated by two very short teeth, the internal border of which is very long, and the external border (comprehended between the point and the insertion of the last spine) very short; tooth of the lateral-abdominal border more acute, is situated towards the middle of that border; movable spines of the lateral-posterior border moderate, and all nearly of the same length in the male; the three first rather long in the female; but the three last extremely short, and much wider than they are long. Caudal stylet triangular, spiny on its upper border, and slightly concave on its inferior surface. Last pair of jaw-feet turned towards the end with four elongated appendages, which are lamellated, flattened, and subulate.

(M. E.)

This is the Cancer moluccanus of Clusius; Cancer per versus of Rumphius; Limulus Polyphemus of Fabricius; Limulus gigas of Müller; and Limulus moluccanus of Latreille.

M. Milne Edwards is of opinion that Leach’s Limulus Latreillii probably belongs to this species, as well as Limulus tridentatus of the same author.

**Limulus moluccanus** is apparently the Cancer figured by Bonnitz in the fifth book of his 'Natural and Medical History of the East Indies,' p. 85, in which he notices its sword-like appendage, and states that if any incautious fisherman is wounded by it, the pain is like that caused by a scorpion, adding, that its flesh is not so delicate as that of the other crabs. The chapter is headed by the following verse, which refers to the painful wound inflicted by the tail:

"Quodque cancer moluccanus facat, Petitur..."

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**Limulus virgatesus.** M. Milne Edwards states that this species, the female only of which is known to him, bears a strong resemblance to Limulus moluccanus, but is distinguished from it by the considerable length of the posterior foot, the penultimate joint of which is extremely short, and surrounded at its base with seven spines, which instead of being flat, very much elongated, and rather wide, are rounded, conic, and very much pointed. The four last pairs of feet were broken in the only individual which M. Milne Edwards had examined, so that he could not judge the character indicated by Latreille, the name and describer of the species, drawn from the monadactylous formation of the second pair of feet. It is also worthy of note, M. Milne Edwards adds, that the cephalo-thoracic buccula is less convex than in the preceding species.

The same author observes that the Limulus prae-" "

L. Limulus, second metamorphosis. the Paris museum under the name of Limulus kermacki, Latreille. This species, having the teeth or posterior angles of the abdomen bucculae larger and more regularly triangular; the external border of these teeth being nearly as long as the internal border, and their base much less wider than the median between them, and occupied by the surface of the abdomen covered with small spines. The tooth of its latero-anterior border larger, and situated near that which separates border from the lateral-abdominal border; movable spines of the lateral-posterior border of the male are of the three first pairs very long, three last pairs very short, but sharp in the female. Caudal stylet triangular, and spiny on its borders. Frontalief of the male strongly notched and sinuous, so as to appear trilobal.

**Locality.**—Coasts of Japan, and probably of China.

This is the Keboto-gani (Helmet-crab) of the Japanese Un-kii, or Uni-do-gami of the Chinese.

2. Species in which the third pair of jaw-feet is uniformly in both sexes, and which have the movable spines of the latero-posterior border of the abdomen diminish gradually in length in both male and female.

a. Second pair of jaw-feet monadactylous in the male. Caudal stylet triangular and sharp on its upper border.

**Limulus Polyphemus.**—Description.—Cephalo-thoracic bucculae more convex than in the preceding species, preserving for a longer period the seven spines of the upper surface. Posterior spines of the abdomen large, and representing an equalilateral triangle, and being longer than they are wide at their base. Movable spines of the latero-posterior border more acute, and similar in both sexes; the three first pairs of the male the project more, the second diminishing speedily and the caudal stylet is less long. (M. E.)

**Locality.**—The Atlantic Ocean, coasts of North America, and the Antilles.

This is the Araneus marius of De Laet; Cancer moluccanus of Wormius; Monocerus Polyphemus of Linnaeus; but he confounds under this name both the Oriental American species; Limulus cyclops of Fabricius; Limulus Americanus of Leach; Polypus occidentalis of Marshall; and Limulus Polyphemus of Leach.

John de Laet, in his 'Novus Orbis' (1633), gives a fair figure of this species in the 10th chapter of his book, and states that the arms of the Indians (Ambosques) of Wijngaerdens Eylandt in North Holland, club, bow and arrows with which they sharpen with the crustaceous tail of the monstrous fish Sigur, Siguanou, or Araneus marius, by which name the Limulus there engraven is known to the natives and Dutchmen. De Laet gives a good description of this animal, and says that it loves the sandy shores, and is mostly taken at seastuaries, of various sizes, not a few having a tail exceeding a palm in length.

M. Milne Edwards observes that Limulus hannah, a variety of this species having the last median tooth of the upper surface of the abdomen more protruded than it is ordinarily to be seen in adults.

a a. All the jaw-feet cheliform in the male and as in the female: caudal stylet rounded above.
**Limbulus rotundicauda.**—Description.—Cephalothoracic exoskeleton wider than in the preceding species, less convex, and deprived of the series of small spines between the first teeth of its upper surface, but with a number of these spiniform points scattered on the occipital region; in its inner border about twice as large as the external border; its opisthosoma moveable nearly as in the preceding. Cephalothoracic exoskeleton with rounded borders. (M.E.X.)

Locality.—The Moluccas.

This is the *Cancer marinus pecurator* of Seba.

**Fossil Xiphosura.**

The fossil forms of this group, contemporaneous as some of them were with the Trilobites, to which they bear so strong a relationship, are among the most interesting fossils, *Limbulus triloboides*, Buckl., from the beds of Maine, and is a pl. 46 of the *Bridge-water Treatise*, is very trilobitic in appearance, and in the early state of the animal, before development of the caudal styly, the resemblance must have been still more striking; nor will it escape the notice of the paleontologist how, in the Rhenish beds, the number of the trilobites is furnished with a long caudal appendage.

Geological Distribution, &c.—*Limbulus*, as Dr. Buckland remarks in the work above noticed, has been found in the coal formation of Staffordshire and Derby, as well as in the Jurassic limestone of Aichstadt, near Apenheim, together with many other marine crustaceans of a higher order.

M. Milne Edwards notices the numerous species which have been recorded. That figured by Desmarest under the name of *Limulus appendens* (Mars. and Knorr) is found, he observes, in the lithographic slates of Solenhofen and Pappenheim. In M. Edwards' opinion approaches *Limulus longissimus* more than any other fossil species, but appears to have the latero-posterior borders more oblique. The cephalothoracic exoskeleton is not divided, and the abdomen wider, with its latero-anterior borders very short; as to the moveable spines, they are, i.e., remarks, six in number, and are all long and slender.

Other fossil Limuli have, M. Milne Edwards adds, been discovered, not only in this formation, but also in the muschelkalk and the Jurassic limestone, by Count R. Ram, who has given figures of them in the excellent work of Van der Hoeven on the Limuli; but M. Milne Edwards thinks it probable that these adductions have not been as decided, and sufficient to enable naturalists to assign specific characters to them, and he confines himself to observations that *Limulus intermedius*, Muntz, found at Solenhofen, and *Limulus brevicauda* (brevicaudatus), of the Jurassic limestone of Aichstadt, near Apenheim, with a very short appendage, and of which the abdomen, represents a rhomboid rather than a hexagon, its anterior border being nearly conformed with its latero-anterior borders. *Limulus ornatus* of the same author, in the opinion of M. Milne Edwards, appears to resemble the fossils more or less, and many other characters that are.

B. Xiphosura has been used by Fitzinger to designate a genus of Saurians arranged by Mr. Swainson as a *Genus of Agamid*. 

**Xorulio, or Jorullo,** is a volcano situated in the State of Durango, one of the United States of Mexico, in 21° 59' lat. and 101° 32' W. long. This volcano has risen out of the earth in modern times; and of its origin we have an account. The Monte Nuvo near Naples, which was blown in 1538 by a volcanic eruption, did not continue to exist longer in a volcanic state than seven years. From the extraordinary height and the total disappearance above the ballet of clouds, it is evident that it has become a mountain, and the scattered pyramids from which the volcano rests. In the small cones at the foot of the volcano balls of basalt are found, which are enclosed in hard clay lying in concentric layers; whence Humboldt infers that those volcanos which have become extinct have been the scene of revolutions. The two rivers mentioned above are at present lost under the lava, but on the western side of the Mal Pas there are now found some hot-springs, in which the thermometer rises to 105° Fahrenheit.

**Xylander, Gulelmi.**—Xylander's real name was Holzmann (Woodman), under the family name, in a short time after his birth, he changed into the elegant Greek form of Xylander. He was born at Augsburg, December 26, 1532, of poor parents. Xylander obtained the patronage of the Academy of Letters in 1570.
Wolfgang Relinger, a patrician of Augsburg, who procured him the necessary means for prosecuting his studies till he was received into the College of Augsburg, where he had a certain allowance, which was appropriated to a limited number of pupils. Thus we must form that as a boy he had shown great talent. In 1549 he went to Tübingen, and in 1556 to Basel. His studies were the mathematics and Greek and Latin literature. After the death of J. Micylius, in 1558, he was made Greek professor in Basel, but he was obliged to add to his means by his pen. He died in February, 1576, having shortened his life by his excessive labour, and, according to some accounts, by drinking. It is the statement of Jöcher that his salary as professor was insufficient, and that he was obliged to work for the booksellers; but in the 'Biographie Universelle' (art. 'Xylander', by Weiss) it is maintained that his salary was sufficient. If he was drunk and extravagant, it may very well have happened that he was always poor and glad to work for money. In the elegant verses prefixed to his translation of Dion Cassius, and placed at the end of his dedicatory epistle, he complains of his poverty. This dedication is dated November 1, 1558, and is the following year he was appointed professor at Heidelberg. The greater part of his works appeared after his appointment at Heidelberg. Xylander was also named by the elector palatine Frederic, secretary to the congregation at Maulbronn, which was held for the settlement of differences among the Protevangelists, and is said to have received money for his services from this prince, and also from the duke of Würtemberg. It seems probable that, with all these means and what he received for his literary labours, if he was poor after he went to Heidelberg, it must have been through his own improvidence.

Xylander's works are very numerous. A large part of them consists of translations from Greek and Latin authors.

His translations into Latin are:—1. Plutarch's 'De Republica'. Basel, 1553, 4to. 2. Strabo, accompanied with the Greek text, Basel, 1571, fol.; 3. 'The Chronicle of Cedrenus,' with the Greek text, Basel, 1565, fol.; 4. Tryphiodorus, in Latin verse; he is said to have made this version when he was sixteen years of age. 4. The work of Michael Psellus, and Chaucer's 'Canterbury Tales', translated by him notes, Basel, 1556, 8vo.; 5. The History of Dion Cassius, Basel, 1558, fol., with the Latin translation of Xiphilinus by W. Blance, which he corrected ['Xiphilinius'], 6. 'The Life of the Emperor Marcus Aurelius', translated by So- richi, 1598, 8vo.; Lyon, 1592, 12mo; 'Greek and Latin, Basel, 1568, 8vo.; To this last and corrected edition Xylander added the versions of Antoninus Liberalis, the work generally attributed to Apollonius Dysiscus, and which, Xylander, under the title of 'Antonini Liberalis Gaminge', defined:—Calyx coriaceus, 4-5-furrowed; petals 4 or 5, coriaceus; stamens 8-10, the filaments of which are joined into a tube, which is toothed at the apex, and bears anthers on the inside of the throat; the style about 1½ in. long, stigma bifid. One other species is also Xylander's, but differs from the above in being a 4-5-seeded; the seeds thick and without albumen.

Carapa Guineanensis, the Persoonia Guineensis of Willdenow, is a native of the forests of Guinea. It has the taste of leaves. The wood is coarse, coriaceous, and shining. The seeds of this tree yield an oil, which is extracted by the natives of Guinea by boiling and used by them for applying to the hair and anointing their bodies. The oil is thick and has a bitter taste, and attains a height of 4 or 5 feet, and, the trunk is used for making masts for small vessels. The fruit is about the size of an apple. The Caribbees call the tree Carna, the Caripus J-Antroba. C. Guineensis is a native of Sierra Leone, and the oil of the nut is used for making soap. C. Moluccensis, the Xylocarpus Granatum of Kema, a native of the Moluccas. It has 3 pairs of opposite, acute leaflets. It is called by the Cingaleses 'Gaha, and by the Tamuls 'Candulgre'. It has an extremely sweet taste. (Don's Miller; Lindley, Natural System.)

XYLOCOPA (that is, wood-eaters), a genus of the Lepidoptera family Scopuliplices,Late, or Anthophorides. It is characterized by the presence of several small, thick, light-colored hairs upon the hind legs of the females, which constitute pollen-brushes. The basal joint of the posterior tarsus usually exhibits its extremity angularly produced. They have no pollen-plates, and the abdomen is divided into a ventral pollen-labium. The two posterior tarsal joints of three perfect submarginal cells, the third joint of the antennae...
frequently long and elevate, being very slender at the base; the mouth is sometimes considerably developed. Notwithstanding the shortness of the wings and the comparative bulk of the body, these insects fly with much strength and activity, and with a loud buzzing noise.

The sexes are frequently (in many cases), both in colour and structure; the males in some having very long antennae, while in others the posterior femora are much thickened, and in a few the tarsi of the intermediate legs are furnished with curious brushes of hair. The face is frequently of a pale yellow colour. The females are usually of darker and more obscure colours than the males. They form their nests in crevices of old walls or in banks exposed to the sun. Their cells are composed of earth and are very smooth in the inside, and the mouth of the nest is closed with the same material.

The wings of the Xylocopa, or (as they are frequently termed) carpenter-bees, are most frequently (although not always) black, with a fine purple or violet gloss. The habits, &c. of a French species, the X. violacea, have been carefully studied. The females of this species appear in the spring, and select posts, palings, &c., in which they construct burrows from 12 to 15 inches in length, and rather more than half an inch in diameter. The two extremities of the tunnel are covered, leaving a narrow passage at each end. Upon the completion of these works, they deposit an egg at the bottom, with a due supply of pollen-paste; the whole is then covered with a layer of agglutinated sawdust, formed during the construction of the burrow. The layer thus formed is made to act in the double capacity of a roof for the original cell and a floor for another above it. In this manner about 12 cells are usually formed. When the larvae are full grown, they assume the pupal state, head downwards, so as to allow the lowermost and oldest to make its way out of the bottom of the burrow as soon as its wings are sufficiently developed, and which consequently occurs sooner than in those in the upper cells.

The males of some of the large species, X. latipes and others not yet properly described, have the fore-legs greatly dilated. An excellent history of the Xylocopa is given by Réaumur (Mém., tom. vi., mém. iv.).

XYLOIDINE. This name has been given to paper which has been immersed for a moment in strong nitric acid, and then washed in distilled water. The paper assumes the feel and toughness of parchment, and is so combustible as to serve for tinder.

XYLOMA, a genus of fungid plants approaching in character to that of Spharia. From this genus it was formerly distinguished by negative characters, such as the cavity not being external. All the species which were referred to this genus are placed by Berkeley under the genera Spharia, Hysterium, Phaeodium, &c. The most common species of this genus are found on the decaying leaves of trees, especially of the sycamore and maple, the lower of which are frequently covered with black spots, as the results of the attacks of fungi formerly referred to this genus.

XYLOMELUM (that is, 'wood-apple'), a genus of plants belonging to the natural order Proteaceae. The Proteaceae are placed by Lindley in his tubifserous group of incomplete Exogens. The type of this order is Protea, which was so named on account of the variable forms of foliage prevailing amongst its species. Nor has the subsequent discovery of numerous genera and species rendered this name at all inappropriate for the whole family. Our knowledge of these plants is entirely of a recent date, only the species of the genera Protea and Leucodendron being known to Linnaeus. Jussieu was the first who established this order, in his Genera Plantarum; and his definition of it applies to nearly all the species and genera since added, but it is to Brown that we are more indebted for our knowledge of this order than to any other writer.

The order Proteaceae possess the following characters: the perianth or calyx is 4-leaved; the sepals distinct, or cohering into a tube with a 4-cleft limb; the sepals subcoriaceous, coloured, pubescent externally, and valvate in vaccination; the stamens definite, opposite the lobes of the calyx, and generally exerted with very short filaments; the pollen is normally triangular, sometimes elliptic or cuneate, rarely spherical; occasionally there exist four hypogynous scales or glands, or barren stamens, alternating with the lobes of the calyx and prefiguring a corolla; the germen is free, often stipulate, formed of a single carpel, the style simple and terminal, and the ovules 1, 2, or many; the fruit is variable, either dry or succulent, and either deciduous or indefinite; 1, or more seeds; the seeds without albumen, often winged, and furnished with a clipeus; the embryo straight and white, with two or more cotyledons, the plumule scarcely visible, and the radicle inferior and short.

The species are shrubs or small trees, with usually um-
This order is very easily distinguished by the hard, dry, woody texture of the leaves, by the irregular perianths having a valvate evagination, the stamens placed on the lobes of the perianth, and by its dehiscent fruit. Another characteristic of this order is distinguished from others which are allied to it is that the radicle points towards the base of the fruit. In this order there is one herbaceous plant, the *Symphionema posticum*. Pubescence is very general, and consists either of a short impalpable tomentum of soft hairs. The existence of or absence of this pubescence in the leaves cannot always be relied on in distinguishing the species, but the short tomentum of the under surface is of greater consequence than the spreading hairs. In the bractes and flowers more dependence may be placed on it. The external envelope of this order is coloured, and has the external characters of a corolla; but Brown has, with Jussieu and Adanson, denominated this a calyx, 'chiefly because the staminodia, of equal number with its lamina, are constantly opposite to them, and from the close analogy subsisting between this family and that of Thyme and, in which, I believe, the greater number of botanists will allow that this envelope is really calyx.' (Brown.) One of the most remarkable points in the calyx is its invaginate division into four leaves or segments, although it has a strong tendency to irregularity. In the distinction of the genus the stamens afford good characters. The deviations from the usual structure of the anthers are not many, but are singular. In the genera *Simia*, *Conospermum*, and *Symphionema*, they are syngenesious, and not only do the anthers adhere together, but the corresponding lobes of these being, when considered separately, entirely open, are so applied to each other as to form but one cell without a trace of any intermediate trace. The peculiar structure of the genus *Helwindia*, named after the Hon. D. R. Bellenden Ker, who has published many valuable papers on botany in the 'Annals of Botany' and the 'Botanical Magazine.' *Grevillea* was named by Brown in honour of Sir Joseph Banks, his intimate and constant friend. *Unilocular*, a genus closely allied to the former, was named in honour of Mr. Dryandra, a learned botanist and a distinguished patron of the scientific arts. *Knightia* is a genus which was discovered by Joseph Banks, and, at his suggestion, named by Brown in honour of the late Honourable Charles Francis Greville, a most natural history, and for many years an editor of the *Botanical Magazine*. *Dryandra* was named by Sir Joseph Banks, who was associated with the late Dr. Banks in the examination of the specimens of vegetable products of the South Island. *Dryandra* was named by Sir Joseph Banks, a genus closely allied to *Bankia* and equalled in number, habits, and the botanical sciences.

The geographical distribution of these plants is interesting. They are almost entirely confined to the southern hemisphere, an observation first made by Mr. Banks. Their diffusion is very extensive in this hemisphere, being confined in latitude and longitude in its eastern limit. They cover not only the larger southern continents but are also found in New Zealand and New Caledonia. They have not hitherto been found in Madagascar or lesser islands of the South Seas. In America they have been found in Terra del Fuego, in Chili, in Peru and Guiana. The American species have more affinity to those of New Holland than of Africa. It may be inferred that this family of plants is distributed over Africa, which are abundant at the Cape of Good Hope, and Blue is a genuine species of Protea in Abyssinia. Western shores of New Holland have been explored, an account of Proteaceous plants have been found, the great new the order existing here in about the same latitude as the Cape of Good Hope. One of the most remarkable species is that of *Dryandra*, a genus closely allied to *Bankia*, and equalled in number, habits, and the botanical sciences.
from the structure of the order, are the most local, and are found either in the principal parallel or in the highest latitude. The range of the species of the order is very limited, and there has been no instance recorded of a species of this family being found in the eastern and western shores of New Holland. Baskets and told it is probably the most widely extended species; but although its range of latitude is very considerable, its extension in longitude is very small.

'The favourite station,' says Brown, 'of Proteaceae is in dry, stony, exposed places, especially near the shores, where they occur also, though more rarely, in loose sand. Scarcely any of them require shelter, and none a good soil. They are found in wet bogs or even in shallow pools of fresh water, and at the height and nakedness of the Alps in the savannahs, grows, according to him, in salt marshes. Respecting the height to which plants of this order ascend, a few facts are already known. The authors of the "Flora Peruensis" mention in general terms several species as being alpine; and Humboldt, in his valuable chart of equinoctial botany, has given the mean height of Embothrium emarginatum about 9300 feet, assigning it a range of only 300 feet. 'On the summits of the mountains the tips of plants may be found, the genus, less, in the common height of about 4000 feet, I have found species of Embothrium, as well as other genera hitherto observed in no similar situation. Embothrium however, as it is the most southern genus of any extent, so it is also, as might have been expected, and thwart for the principal, and in the genus only of this order are found in more than one continent. Rhopala, the most northern genus, which, though chiefly occurring in America, is to be met with also in Japam-China and in the Malay Archipelago; and Embothrion genus most of any extent, is common to New Holland and America.'

None of the plants belonging to the natural order Proteaceae are remarkable for their medicinal properties. The fruit of a species of the genus Guepinia is said to be sold in the markets of Chili under the name of Jaltas. In the Cape of Good Hope the plants of this order are most frequently made use of as fire-wood. For this purpose the dry woody character of their leaves peculiarly fits them. The seeds are frequently used by gardeners who appear to be much prized by gardeners, and form a part of every good collection of plants. One of the finest collections of these plants in this country is at the Royal Gardens at Kew, where a great variety of this singular and interesting order is represented. A genus, less, in the neighbourhood in this country are Grevillea, Banksia, and Dyandra. The fruit of the Xylometum pyriforme, which the cut accompanying this article represents, is very hard, and is known in New Holland under the name of Wooden Pear. It is supposed to grow in Natal, from which several very hard seeds, which must come from their places of growth, the seeds should be sown in pots filled with a sandy loam, and placed in a hotbed: when the plants come up, they should be carefully given them. Some of the species may be propagated by cuttings, which should be planted in the spring or summer, and placed in a hotbed. These plants should not have much water, nor be treated very tenderly. (Brown, 'On the Proteaceae of Jussieu,' in vol. x. of Pl. Tract.; Jussieu, art. 'Proteaceae,' in Dictionnaire des Sciences Naturelles; Burnett's Outlines of Botany; Lindley, Natural System.)

XYLOPHAGA. [PHOLAS, p. 108.] XYLOPHAGI (that is, wood-eaters), a family of insects of the order Homoptera, which are divided from the family which usually precedes them (the Weevils) by the absence of a proboscis. The antennae are thickened towards their extremities, or perforated from the base; always short, and usually composed of less than fifteen joints. The palpi are small, and do not exceed the first three joints. The insects generally live in wood, which is perforated and channelled in various directions by their larvae. Some species are destructive to pines and firs, some to olives, while others feed on fungi. This family is divided into three sections.

Section I.

Those which have the antennae composed of ten joints at least, either terminated in a thick club, generally solid, or having three elongated plates, or forming a cylindrical and perforate club from the base; the palpi are conical; the anterior tibiae in the majority are toothed and armed with a strong hook, and the tarso generally have the penultimate joint of the palpi very short, and the antenna terminated in a solid or trilaminar mass, preceded by five joints at the least.

These Xylophagi compose the genus

Scolytus. Geoffroy.

In some the penultimate tarsal joint is bilobed, and the antennae have seven or eight joints preceding the club. Scolytus proper (Receptogaster, Herbst) has the antennae composed of ten or eleven joints before the club, the palpi are subconical; the anterior tibiae of the majority are toothed and armed with a strong hook, and the tarsal joints generally have the penultimate joint of the palpi very short, and the antennae terminated in a solid or trilaminar mass, preceded by five joints at the least.
Fossil specimens of this genus have been found embedded in amber.

The others have the palpi large, very visible, and of unequal length; body depressed and narrowed anteriorly; the antennae either 2-jointed (the second joint being very large and irregularly shaped) or 10-jointed and entirely perforated; tarsi entire.

These insects are of great rarity and very singular appearance, and are also foreign to Europe. They compose the genus

*Paussus.* Linn.

*Paussus* proper has only two joints to the antennae, the second very large and compressed.

*Paussus* succinctus. Professor Azellus observed a dim phosphoric light to be emitted from the singular holow antennae of this insect. (Linn. Trans., iv. 201.)

*Hylotornes,* Dalm., composed of a single species, apparently with ocelli, and with the antennae scarcely longer than the head, 2-jointed.

*Cerapterus,* Swed., has the antennae 10-jointed and perforated. (See Westwood's Monograph upon the genus *Paussus,* in Trans. Linn. Soc.)

Section II

Those which have only 10-jointed antennae, and the maxillary palpi do not taper to a point, but are either of equal thickness throughout or dilated at the extremity.

The joints of the tarsi always entire.

They are divisible into two principal genera, according to the mode in which the antennae terminate. The three terminal joints form a perforate club in the first, or

*Bostrichus.* Geoffr.

*Bostrichus* proper has the body more or less cylindrical; the head rounded, nearly globular, and capable of being rounded into the thorax as far as the eyes; the thorax is never less convex before, and forms a kind of hood. The two first joints of the tarsi, as well as the last, are elongated.

The species is found in old wood and timber.

*Bechnoter* dispars, Fabr., *Hylotornes dispars,* Erichson.

This *Apple-Bark Beetle* is very common in Austria, but rare in this country. It is termed *dispars* because the male is not only about half the size of, but differently formed from, the female, bearing more resemblance to *Anoplognathus* than to the *Bark-beetles* generally.

The head and thorax are black; the extremity of the palpi and antennae reddish; the wing-cases long, blackish, and somewhat hairy; the feet dilated, and of a reddish yellow; the tights black. The female somewhat resembles the *Longhorn-Bark-Beelee, Bostrichus rufipes,* but the wing-cases are not deeply furrowed, and the spots not so deep as they are in that species. The male (as we have previously observed) is smaller than the female, and it has chestnut-brown wing-cases and reddish tights. These insects, in their attacks alone, are entirely to the detriment of the tree. They make no distinction between the age or healthy state of the tree, whether it is young or old, or whether it may shoot out much or little; all that they require is that it shall not be of less thickness than about half an inch in diameter. Having found a tree suitable, the females bore a completely round but somewhat oblique hole, penetrating nearly to the centre of the tree: she first goes upwards to the side, and then downwards. Upon coming near to the bark, she turns back, and goes to the other side downwards, forming a new path. These paths, leading upwards and downwards, seldom exceed one inch and a half in the minute particles of wood, or worm-meal, which are ejected, indicate the presence of the insect. In case of the pine beetle, *Bostrichus graphus* and *piniperda,* it is stated by Bechstein to be ejected by the larva, but in this case it is thrown out by the beetle itself. We give the following extract from Köll's work 'On Insects injurious to Fruit-Trees,' &c., bearing on these particulars, and, if correct, the insect should be at variance with the recorded habits of the family:—

> At the end of the entrance the female makes a somewhat wide apartment, and lays her eggs in it in a heap: they are of a snow-white, longish, and of a somewhat posteriorly pointed form, from seven to ten in number, and sometimes fewer. The path however is previously pretty thickly covered with a whitish substance, which resembles an incrustation of salt. I consider this as a kind of ambrosia on which the hatched larve feed; and I conclude it is their principal nourishment, as I saw no passage or chamber in which the eggs were laid without this substance, and no full-grown larve in the passages and chambers in which this substance was not consumed. As has been used it is whitish, easily rubbed with the finger to the touch, powdery, melts on the tongue, and is without any palatable taste. I am of opinion that the female forms this substance from the sap of the tree, to which she adds a peculiar juice.

*Bostrichus typographicus,* the Typographer or Beetle, is perhaps the most destructive of the whole class. It particularly attacks the silver-firs (*Picea pascense*), but when that tree is not abundant, it will attack itself other species of pines and firs. The perfect beetle is the two to two and a half lines long, and from one to one and a quarter to a quarter of an inch broad, and has a black and white striped body. As it ramifies into the bark, it is of rusty yellow; but on exposure to the changes to a brownish black colour.

The injury this insect does is chiefly effected by the larve, which destroy the sap-wood; and, then, if the numerous, can kill a healthy fir in the course of a few weeks.

This beetle committed immense devastation in the north of Germany about the close of the last century.

*Bostrichus orthographicus,* Duftsch., or the Spruce-Bark Beetle; *B. laricis,* Fabr., or the Larch-Bark Beetle; *B. Pinaster,* Bechst., or Red Bark-Beetle, require no particular notice.

*Pico,* Fabr., has the body narrower than *Bostrichus* in the thorax, and the antennae flat.

*Cis,* Latr., has the body oval, depressed, and bevelled; last tarsal joint much longer than the first head of the males frequently horned. Many minute species are found on fungi.

*Nasutus,* Desmar., has the body long, linear, and mandibles robust and exsured. *N. elongata* is a rare and rare British species, sometimes found under the bark of old paling.

The second genus is distinguished from the first having the club or tenth joint of the antennae solid and button-shaped; the body is elongated, with the head narrowed into an oblong snout or muzzle; the palpi are very small, and as well as the mandibles, divisible into two joints.

This genus is termed

**Monotoma.**

*Monotoma* proper, Herbst, has the head as large as the thorax, and separated from it by a narrower part.

*Cecidomyia,* Lain., has the front of the head produced at an obtuse triangle, the first joint of the antennae longer than the second; the body nearly oval or paripiped, and the elytra not truncate behind.

The genera *Synchita,* Heuw., *Rhizophagus,* Herbst, are included in *Monotoma,* but are not deserving of a special remarks.

Section III

The *Xylaphagi* of this division have eleven distinct in the antennae; the palpi filiform, or thickened at the tips and at the angles, and not perforate; the last joints entire. Those in which the club of the antennae consists only of two joints constitute the genus

*Lytus.*

*Lytus* proper, Fabr., has the mandibles and basal joint of the antennae exposed. *Diodesema,* Megerle, and *Bo.* Herbst, are included in the genus *Lytus.*

In some of the mandibles are concealed or scarcely visible.

These are the genus

*Mycetophagus.*

*Mycetophagus* proper has the antennae at least as long as the thorax; body oval; thorax transverse; and club of the antennae commencing at the sixth or seventh joint.

*Scolanus* has the body nearly linear, of greater length than breadth, and as broad as the base of the elytra; *S. dentatus,* a small flat insect, frequent floating found floating in tea and coffee, being introduced with sugar. In others the mandibles are entirely exposed large; the body oval and broad, and the elytra not truncate behind. These insects constitute the genus

*Trogosia.* Olivier.

*Trogosia* proper has the antennae shorter than the thorax; the mandibles shorter than the head, and convex to the labium; the antennae all at the ends between the palpi, and the maxillae have a single joint.
The reader who has carefully followed us over the three sections of the Xylophagine will readily perceive that Latin is a language in which the use of the genitive is a transition between the Cercidionae and Cerambycidae, commencing with those which have the club of the antenna solid, and proceeding through those families in which the club is less compactly constructed, as far as the Trogositalae. In this transition the number of the points by which the antennæ are united becomes entirely obvious enough; but in other and more important points, as for instance in the structure of the imago, as well as in that of the larva, it cannot be maintained; and in the section of the Trogositae, to the Nitidulidae, and in the Eudocinidae, the number of the points of union becomes still more obvious. But the number of these points in the Nitidulidae, and in the Eudocinidae, is not as yet sufficiently determined, and it is not possible to determine it in these families with certainty. The number of the points of union in the Trogositalae is, however, determined, and it is equal to three.

The genus Scarabaeus, Linn., comprising two divisions, corresponding with the families Dynastidae and Rutelidae of MacLeay,

The Dynastidae (comprising the Gastrotrapes of Fabricius) constitute an extensive series of gigantic insects, the males of which are pre-eminentiy distinguished by various peculiar protuberances, horns, or tubercles arising from the thorax and horns, and often from both these parts (occasionally arising from a very peculiar appearance) and of which the females are destitute. The cephalus is small, triangular, pointed in front, or terminated by two small obtuse teeth; the labrum is a broad membranous plate, furnished with two or more oblong teeth; the tibiae are very robust and horned, furnished with one or two obtuse teeth. The maxillae are either terminated by a coriaceous ciliated lobe, or by an elongated cornaceous piece, having one or several acute teeth on its sides; the mandibles are furnished with an ovoid or triangular form, truncated in front; the prosternum is not produced behind into a lobe; the tarsal claws are of an equal size, and the scutellum is distinct; the elytra do not entirely cover the extremity of the abdomen; the antennae are not furnished with a club, and the lamellae are not being enclosed within the two external ones.

The colour of these insects is usually of a dark rich brown or chestnut colour. They reside either in rich vegetable mould or in the putrid detritus arising from the decay of vegetable tissues.

Oryctes, Illiger, is a very numerous genus, having the legs all nearly of the same length, with the four hind tibias thick and crooked. As a type of this genus, we may take the common continental species, O. natesornis, which is frequently collected. This insect is about the size of a grain of hempseed, and of a yellow colour; the larva continues in that state four or five years, and then encloses itself in an oval and very smooth cocoon; the pupa lies upon its back, and the adult imago remains in its cell for about a month after it has attained the perfect state. The insect is about one inch and a half long, and the male is distinguished by having a curved horn upon the head.

Some of the Dynastidae require an immense size. The Scarabaeus hercules, Linn., an inhabitant of South America, is five inches long.

The Rutelidae chiefly occupy the tropical zone, there being only six or eight species found in Europe.

Xylophila, Linn., is a species of the Rutelidae, with which we may often fancifully attempt to extend the species of this family, from which they differ in the absence of the peculiar horns or prominences which are present on the heads of the males of the Dynastidae. The antennæ are 10-jointed, the club 5-jointed; the labrum is externally furnished with two paired external protuberances, and within; the mandibles are short and corneous, and more or less exserted with a notch on the outer margin near the tip; the maxillæ are also horned and truncate, and with four or six strong teeth at the tip, with the labium sometimes membranous; the labium is externally furnished with the mentum; the elytra do not conceal the extremity of the abdomen; the thorax is transverse-quadrate; the scutellum large and distinct; the mesosternum is anteriorly produced between the middle legs, the legs are robust, with the posterior femora sometimes greatly thickened; the claws of the tarsi are generally unequal in size, and occasionally divided; the elytra commonly exhibit a transverse section, dividing as it were into two parts before the eyes. (Westwood.) The head and thorax are identical in both sexes.

For a few exceptions, the Rutelidae are confined to the equatorial regions of America.

Xylophilus, Linn., is a genus of plants belonging to the natural order Euboeiacae. The species of this genus are shrubs, with a hard and rigid foliage. The flowers are monocious. The male flowers have a calyx cut into six segments, three of which are thick and fleshy, and a nectary composed of six glandular globules. The calyx and nectary of the female flowers are the same as the male; the styles are three; the stigma is 3-cleft; the fruit is a 3-celled capsule with six valves, and two seeds in each cell.

This genus closely resembles Phyllanthus. Most of the species are natives of the West Indies, where they are known by the name of sea-side laurels and love-flowers. They vary principally in the form and character of their leaves, and their specific characters are chiefly founded on this character. These plants have many of them been cultivated in the stoves in European collections. They may be propagated by seeds or by cuttings, and always acquire a stem of the highest order. They require the constant protection of the stoves in winter, but in the hot summer months they may be exposed to the open air if taken in on cold nights.

Xylopia, Linn., is a genus of plants belonging to the natural order Annonaceae. It has a 3-jointed calyx, with ovate coriaceous acutish segments; 6 petals, of which the 3 outer ones are largest; numerous stamens inserted into a globose receptacle: from 2 to 15 carpels on short stipes, flattened, 1-celled, 1-2-seeded, sometimes dissected, some segments renate; the seeds are covered with an aril. About twelve species of this genus have been described, all of them natives of South America. They are trees or shrubs, with oblong or lanceolate leaves, and axillary, bracteate, 1- or many-flowered inflorescences, the woody at all times is bitter. The botanical names of these are called Bitter-trees.

X. fruits, Shrubby Bitter-wood, is a native of Brazil and Guiana. It is a shrub about 6 feet in height, and has oblong-lanceolate acuminate leaves, with the under surface silky, the peduncles very short, and the carpels smooth. The bark of this plant is manufactured into cordage. The leaves and wood are aromatic. The seeds also contain an acid aromatic oil, and are used in Guiana by the negroes as a substitute for pepper.

X. glabra, Smooth-leaved Bitter-wood, is a native of the islands of Barbadoes and Jamaica. It has oblong-obovate smooth leaves, with 1-flowered peduncles, solitary or in pairs, and smooth carpels. This plant is a tree, and attains a height of 40 feet. The wood, bark, and berries have an aromatic bitter taste, and are used by the Carib Indians. Pigeons feed on the berries, and the flesh of these birds is improved in flavour during the season they eat them. When fresh gathered from the tree, the berries have an agreeable flavour, and are eaten as a fruit. When dry, the outer skin or pericarp is greatly reduced. Sugar sent to this country in hogsheads made of it could not be prepared. Articles of furniture made of it are proverbial for the attacks of insects; the wood is very soft, and the carpels have a bitter taste which it produces in their moulds from the dust.

X. sericea, Silky Bitter-wood, is a native of Brazil. The woods of Rio Janeiro. It is a tree about 20 feet high.

The branches are clothed with a rustulous down, the leaves are lanceolate-oblong, with long points.
The Xyris group of Endemic.

The species are herbaceous plants with fibrous roots. The leaves are radical, sword-shaped, scarious, dilated and equitant at the base. The flowers are arranged in terminal naked imbricated heads. The calyx is glumaceous, 3-lobed; the corolla petaloid, coloured with three petals; the stamens 3; the flower inserted upon the claws of the petals; 3 sterile, alternate with the petals; the anthers 2-celled, and turned outwards; the ovary single, the style bifid; the stigma multifid or undivided; the capsule 1-celled, 3-valved, many-seeded, with a petal placenta; the seed with the radicle on the outside of the albumen, and at the end most remote from the hilum.

This order is united with Restiaceae by Brown and other botanists. The species are found generally in the hotter parts of the world, chiefly in the tropics of America, Asia, and Africa. Some of the species of Xyris are found in the southern states of North America. Of their properties very little is known. X. indicus is said by Agardh to be used as a remedy in itch and leprosy.
Y.

Y has found its way into the alphabets of Western Europe through the later Latin alphabet from the Greek. The oldest form of the Greek character appears to have had no vertical stroke, but to have been precisely the same as the English or Roman V, so that the small character v differs from the small Greek v only in the incline of the curve for an angle. We have said that the letter Y belonged only to the later Roman alphabet. This fact has been already remarked upon under X; and an argument in confirmation of what is there asserted may be drawn from the occurrence of the character between the sounds of name and u in their V the representative of the Greek letter. How then, it may be asked, was it that they subsequently adopted this letter? The answer should probably be this — that the Greek character had changed its power from the original sound of oo, such as is still represented by the Italian u, to a sound probably like that of the French u, or even to a weak i. If we traced the Greek letter Y or V still farther back, we should perhaps arrive at the opinion that it grew itself out of a careless omission of O. The Hebrew character which corresponds to O, viz. Y, already exhibits the opening above, just as the Hebrew W does, compared with the Greek θ. So too the English often write a capital O without joining the circle at the top. To these conceptions, Charles II. was born in the character Y, which ended with a T, contains no other equivalent for the Greek Y; and again the Etruscans had but one character, V, without any O. That the introduction of the character Y into Latin words has been carried beyond the bounds of a mere epigraphic (X), and that any such word would add to what there has been said, that in the well-known Medicean MS. of Virgil there is something suspicious in the fact that this letter always overtops the other letters in such a manner that the vertical shaft is of greater height than that of the hones, if we may so call them, were attached by a subsequent hand, the manuscript until then having merely an (See Foggini's reprint of that MS, and the second line of the copperplate facsimile of the same (anaisiara) of an old Virgil, vol. i., facing p. xxxvi. of the face.)

In the English language there is a great tendency to use his letter at the end of words. This has probably arisen from our having of a tail to the last unit of the tonumalns, preferring ti, ti, vi, &c.; so that to please the eye and give a sort of finish to a word, say, boy, hery, were preferred to nei, be, thei. Before we leave the form of the letter, it may be observed that in y, y', for which it has been supposed by many, that y was the intermediate there of John Youlind, gentleman, who was page, &c., as in Wood: he is stated to have died 25th July, 1670, in his 59th year. Thomas Yalden, or Youlind, was admitted of Magdalen College, Oxford, in 1690: and was, with a brother, employed in the composition of Namur, a Pindaric Ode inscribed to his most sacred and victorious Majesty. He had taken his degree of M.A. with great applause in 1694, and having then entered into holy orders, he succeeded Atterbury, in 1694, as lecturer at Bridewell Hospital. In 1700 he published a poem entitled 'The Temple of Fame,' on the death of the duke of Gloucester, and was the same year made fellow of his college. Soon after this he was presented by the college to a living in Warwickshire, which he held, along with his fellowship, and he was also elected moral philosophy reader, 'an office,' says the 'Biographia Britannica,' 'for life, endowed with a handsome stipend and peculiar privileges.' On the accession of Queen Anne, he wrote another poem, in celebration of that event; and from this time he is said to have unreverently sung through the whole church party. In 1706 he was taken into the family of the duke of Buckingham, and the following year he took his degree of D.D. Some time after this he was presented to the adjoining rectories of Chalton and Cleeve and in Hertfordshire, and he is said to have also enjoyed the sincere prebends of Deans, Harris, and Pendles, in Devonshire. Upon the discovery of what is called Bishop Atterbury's plot, in 1722, Yalden was taken up, and his papers were seized; but it soon appeared that although he was intimate with Kelly, the bishop's secretary, and in the habit of corresponding with him, the treason, if it existed, was certainly in no part of his concoction. All that is known of him is, that he died on the 16th of July, 1736, having to the end of his life, as Dr. Johnson expresses it, 'retained the friendship and frequented the conversation of a very numerous and select set of acquaintance,' and that poems that have been mentione
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Carbery Price, a poet; 'A Hymn to Darkness,' in imitation or emulation of Cowley, which Johnson considers to be his best performance, and to be 'imagined with great vigour, and expressed with great propriety.' "A Hymn to Light," which, in the estimation of the same authority, 'is not equal to the other;' a translation of the second book of Ovid's 'Art of Love,' and many other translations and short original pieces. Many of Yalden's productions in verse are scattered through the third and fourth volumes of Den's (or Tonson's) collection of 'Miscellany Poems;' a number of them are also given in the more recent collections of the English Poets, by Johnson and A. Chalmers; but some appear to be lost, or at least they eluded the researches of J. Nichols (see his Bibliography, iii. 167, and iv. 198). Yalden, who had considerable humour, is the author of a paper in prose, entitled 'Squire Bickerstaff Detected, or, the Astrological Impostor Convicted;' it is a pretended answer to Swift's attacks on Partridge, the astrolagor, who drew up on Partridge's application, and which that person is said to have printed and published without any presumption of the joke. It is printed in most of the editions of Swift's Works.

YALLOFFS. [YALLOFFS.]

YAMA, or YAMA-MUNA, or JUMNA. [HINDUSTAN, p. 215.]

YANG-TSE-KIANG is the name by which one of the largest rivers of Asia is generally known in Europe. It drains the north-eastern districts of Tibet and the central provinces of Mongolia proper. The Yen-ch'i of Pekin is the interior of Asia, about 1850 miles from its mouth in a straight line; but as the river frequently changes its direction and makes very large bends, its whole course is computed to amount to 2000 miles, and it probably exceeds 3000. In length it may therefore be compared with the Amazonas (3300 miles) and the Mississippi (3200 miles). The country watered by the Yang-tse-kiang and its numerous tributaries is estimated by Ritter to have an area of 300,000 square miles, and is equal to the surface of all the countries of continental Europe, as far east as a line drawn from the northernmost corner of the Adriatic northward to the mouth of the Oder in the Baltic.

Upper Course.—The head-waters of this river have never been visited by Europeans, and from not having been known in China until the emperor Kanghi sent persons to ascertain them, and wrote a short memoir on them, which has been translated by Klaproth, in his 'Memoires relatives à l'Asie.' According to the statements in that memoir, the Yang-tse-kiang rises between 32° and 90° north, and between 4° and 35° N. lat., in the Bayan Khara mountains, one of the principal ranges of the Kuenlun system in three branches, all of which bear the Mongol name of Oolun muren; but to the most northern the name of Oolun is prefixed; that of the middle is designated as Toktonai, and the southern river is called K'ai-si. These three rivers run from west to east. The Kat'ai-o olan-muren is joined from the south by a small river bearing the name of Mirus-usu, and from this point, the river flows northward about 180 miles, and then turns to the east, in which direction it runs about 100 miles, where it is joined from the north by the Min-kiang or Tchou and from this place the name of Kin-chia mother of the Tung-tsekiang, or great river). The Kiang runs in a north-eastern direction about 360 miles, where it passes north of 39° N. lat., and then its course is directed to the east by some offsets of the mountain-ranges and forms numerous waterfalls and eddies; then it is more or less divided, and having been floated down the immense rifts of timber where it is found in the middle parts of the course floating far from the provinces near the Pacific, so that the supplies of such water must be derived from an immense country covered with snow, and such a country is only found on the upper part of the course.

Middle Course.—The middle course of the river is through a hilly country, and extends from Tung-Chafoo to King-tseh-foo, at which place it enters the narrow valley of the Tung-tsekiang and flows northward about 180 miles, and then turns to the east, in which direction it runs about 100 miles, where it is joined from the north by the Min-kiang or Tchou and from this place the name of Kiang-chia, from which the Kiang, our large river, takes its name. The Kiang runs in a north-eastern direction about 360 miles, where it passes north of 39° N. lat., and then its course is directed to the east by some offsets of the mountain-ranges and forms numerous waterfalls and eddies; then it is more or less divided, and having been floated down the immense rifts of timber where it is found in the middle parts of the course floating far from the provinces near the Pacific, so that the supplies of such water must be derived from an immense country covered with snow, and such a country is only found on the upper part of the course.
extent of the rafts of timber which he daily met with on the Kiang. They were only ten feet wide, and of different lengths, the longest about a mile or a half in length: but their number was so great, that if all of them had been put together, they would have covered a space of several days' journey. At some places they were fastened to the banks of the river, and it took him more than an hour, or even half a day to pass them. These rafts rose about four or five feet above the surface of the water, and consisted of several kinds of wood. On the rafts were placed other articles, among which he mentioned drugs, parrots, and monkeys: but it appears that rhubarb, musk, and chirwory, which are very far from being the most lucrative articles of trade, were going to Peking. The hilly country, through which this part of the Great River lies, improves lower down. The country near the mouth of the Ta-kiang is mostly covered with high hills, which at some distance rise into mountains, which are not capable of cultivation, but are covered with extensive forests, consisting of different kinds of pine, fir, cedar, and juniper, and a part is overgrown with bamboo. The remainder is well cultivated, and the fields are studded with large plantations of fruit-trees, among which oranges, lemons, and citrus are mentioned. Such is the country near Sui-te-hou, a large commercial town at the mouth of the lesser Ta-kiang. At the mouth of the Kiang-ling, which joins the river farther down, and which is the only branch from the Yang-tse-kiang, that lies the town of Ta-hung-kiang, one of the most important on the banks of the river. In these parts the mountains do not rise to such an elevation as farther up, and the greater portion of the country is under cultivation, and has extensive banks and islands in abundance. Cultivation increases lower down the river to the still more important town of Kuie-she-hou, which stands on the northern banks of the Ta-kiang, in one of the richest parts of China, where hardly a spot is to be found where a crop cannot be raised. This river has become so important a product of the place, that the exception of the coast of the Tap-lung river, which lies about 35 or 40 miles distant from the town, and inhabited by some mountaineers. But this range supplies the town with coal, and vast quantities of salt, which is sent from Kuie-sheh-foo to the lower courses of the river. The Lower Course of the river is 820 miles. From Kiang-te-hoou the river runs about 100 miles south-east, past the outlet of Lake Tung-ting, from that place north-east to the place called Yumichiti or Tappa-ling, from thence to the upper reaches of the river. The Peking tributaries of the river, which empty into the Great River, are numerous and extensive. The rivers, tributaries, and lakes are so distributed as to be easily managed by art, and hardly ever leave the contiguous country, as is repeatedly the case in some regions adjacent to the Hoangho. This plain may be about 200 miles from west to east and about as much from north to south, and is called Yumichiti. Nearly all the productions of China are here raised in the greatest abundance; no spot is uncultivated, and towns and villages cover the country on all sides, and several large towns are found on the banks of the Ta-kiang, as this river and its tributaries supply more extensive and easy means of water-communication enjoyed by any other part of China, except the country immediately adjacent to the Great Canal. Besides several smaller rivers, the Kiang receives from the south a great volume of water by the channel which, issuing at the north-east coast of Lake Tung-ting, flows through the country between 130° E. long. This lake is of great extent, being, according to the statement of the missionaries, more than 200 miles long. It is surrounded by an extremely fertile country, which even in the driest seasons yields abundant crops, the means of irrigation derived from the lake never failing. Two large rivers, originating on the northern declivity of the Nan-ling Mountains, and draining a country as extensive as the island of Great Britain, fall into this lake, the Tsing-shui-kiang and the Hoang-hing, each running more than 400 miles. We have no account of the country drained by these large affluent of the Kiang, nor of the rivers themselves, but we know that there are large towns on their banks at a great distance from their mouths. The largest of these are Ta-kiang, which rises on the southern declivities of the Peking, drains the wide and fertile valley enclosed by the Pe-ling and Tapa-lang ranges, runs nearly parallel with the Ta-kiang, and falls into it after a course of about 500 miles, a great number of towns on its banks, and the river seems navigable nearly to its source. By means of the easy water-communication afforded by these rivers and several large lakes, the country contiguous to the banks of this portion of the river is the most cultivated of any part of China. The drainage of an immense area, and the towns built on them are very populous and industrious. Kiang-te-hou-foo, situated where the river enters the plain of Yumichiti, is large, rich, and well fortified. Where the Han-kiang joins the Ta-kiang there are two large towns, the Tung-ho-foo and the southern Shores. The last-mentioned place is compared by the Jesuits to Paris in extent, and the first to the second town of France. The navigation in the neighbourhood of these two places is so active, that from 4000 to 5000 river barges, some equal in size to the coasting vessels of France, may always be seen either at anchor or plying between the two towns. About 30 miles farther down is the large commercial town of Hoang-te-hou-foo, surrounded by beautiful and fertile country.

The plain of Yumichiti is separated from Lake Poyang by a rocky country, which rises into low mountains, and comes close up to the banks of both the river and the western side of the lake. This mountain-tract is called the Yellow mountains. The lake extends nearly to the south, with an average width of 20 miles. It contains many islands, most of which are cultivated and populous. Both on the west and east it is enclosed by high hills where it approaches the Yang-kiang, but a large low plain surrounds its southern shores, and this plain is traversed by numerous arms of the river Kan-kiang, which is the largest of the rivers that fall into the lake. This river and the country surrounding it are better known in Europe than any other part of China. From Th Chow-foo to Canton to Peking, by which the embassy of Lord Amherst returned from the capital of China. The course of the river is about 300 miles in a straight line, but with its bends it probably exceeds 400 miles. It rises near the town of Chia-chou, and the great road leads to Canton, and becomes navigable at the foot of the pass, where the town of Nan-gan is built, though at this place its width does not exceed 10 yards. Small river barges ply between this place and Kan-kiang. As the river receives water by several tributaries which join it near this place. Hence it has sufficient water for large river-boats, but about 10 miles below the last-mentioned place are the Shepotan, or rocks with the eighteen cataracts. They are only rapids to be avoided in navigation. Barrow thinks that none of them are half so dangerous as the rapids were under old London Bridge at flood. The valley of the Kan-kiang up to the
of indifferent fertility, and comparatively thinly inhabited. Beyond them begins a wide, fertile, and very populous valley, which extends to the town of Nan-shang-foo, the capital of the province Kiangsi, which is large, well-built, and contains many edifices as large as palaces. Below this town the country extends in a low and level plain, which is traversed by the different arms into which the Kiang-kiang branches out before it enters the lake. No impediment to navigation occurs in the Kiang-kiang below the Shepotan. In the hills contiguous to the low plain of Lake Poyang, on the east, the best porcelain clay is found, and some of the largest manufactories of china-ware. It is only called shing (village), because it is not enclosed by walls.

After uniting with the channel which issues from Lake Poyang, the Yang-tse-kiang is always from 2 to 4 miles wide, and contains a great number of islands, most of which are low and formed by alluvium, but a few are rocky and elevated. The country on both sides consists of low hills, composed of sandstone or clay, which terminate on the river in steep declivities, and at some places in precipitous rocks. This country is of indifferent fertility, and a part of it is covered with forests, but is well cultivated. In the westerly part of this hilly country, a large and considerable basin, is the town of Ngaan-king-foo, or Gan-king-foo, a place of great commerce and manufacturing industry. The hilly country ceases where the river Tsahoo-kiang falls into the Yang-tse-kiang. This river brings to it the water of the large Lake Tsahoo, which the Yang-tse-kiang is joined, near the large town of Tailing-foo, by several small rivers. These, as well as the Tsahoo-kiang, are navigable to a considerable extent. From Tailing-foo the Yang-tse-kiang flows through a rather level country and between high banks, so as not to have a bottom along its bed. This country is of considerable fertility, and extends to the town of Nan-king, and even farther down to the vicinity of Tshing-kiang-foo, or the Great Canal.

About 46 miles below Nan-king the Yang-tse-kiang is joined on the north by the western branch of the Great Canal, and about 10 miles farther down, at the town of Kau-kiang-foo, by the eastern branch or principal branch. The Yang-tse-kiang has only been made to shorten the slow communication between Nan-king and the northern provinces, and the branches unite near the town of Yang-foo-teen-foo, one of the largest and most commercial towns in China, whose population is stated to be two millions by the English who resided there for a long time. Robert Hayner never thinks that the population of this place is overstated. From Yang-foo-teen-foo the canal runs directly northward along the borders of Lake Kao-yeou to the Hoang-ho, or Yellow, which is formed by the two branches just mentioned, and is the Great Canal, north of the Yang-tse-kiang, is the entrance to the southern portion of the Great Canal, at the town of Tshing-kiang-foo. This portion of the canal lies nearly parallel to the sea-shore, surrounds at some distance the Lake Taiho or Tai, and terminates at Hang-tse-kiang-foo, the capital of the Tsahoo-kiang. By these two canals the navigation of the Yang-tse-kiang is continued over the eastern and northern provinces of China Proper.

At the junction of the canals the width of the river is about two miles, but farther down it increases considerably. This part of the Yang-tse-kiang is very little known to us, as no European vessels have entered the river, nor have the Jesuits given any account of it. Even their maps is considerably different from Nelles's, in respect of the shallowness of the sea, but much less so in the interior of the country. It is however certain that even junks of the largest kind find no difficulty in sailing up the river to Tung-tshu-foo, a town on the northern side of the estuary of the Yang-tsekiang. Moreover, the mouth of the river seems to form an opening more than 60 miles wide.

In this opening, but much nearer to the southern shores than is the island of Tsang-ming, which is alluvial. It is supposed by Stantion that this island did not exist five hundred years ago, because it is not laid down in the oldest maps existing in Venice, where the Chusan Islands are entered, and that it has been formed since that time. The earthier matter brought down by the Yang-tsekiang was, as it is supposed, arrested at this place by the islands, and thus the island by degrees rose out of the sea. But the fact that the island is not destitute of fresh water, but, on the contrary, is traversed by numerous canals and dikes for the purpose of irrigation, seems to militate against this supposition. The island is about 60 miles long, and from 15 to 18 miles wide, and gives an area of about 900,000 square miles. The population is stated to be half a million, which is more than any tract in England of equal extent contains, except London and its immediate neighbourhood. The whole island is very fertile, and produces abundant crops. In some places salt is obtained, which, according to the missionaries, is extracted from a bed of earth, and is of excellent quality.

The depth of the Yang-tse-kiang, as far as up the tide ascends, that is, to Lake Poyang, is very great, and is expressed in the Chinese proverb, 'The sea has no bottom, and the Ta-kiang no bottom.' Such a depth is not found in any other river, except in the Amazonas, below the Straits of Olybys. These two large rivers are the only large rivers on the globe which open their wide mouths directly opposite the great tide-water, which rushes after rolling over a wide sea. Though the tides on it appears, does not rise more than from 6 to 8 feet. In one hour. The river Yarmouth is reckoned to be the greatest of these rivers, and of 400 miles from the sea in the Yang-kiang. In these two rivers alone several places are found where the same time the current flows the impulsive force received by the tide, and advances the current of the river. [Robinson's Travels, p. 27.] To this peculiarly may be ascribed the great depth of these rivers so far as the tide advances. The tide of course affects only the estuary of the river, and below it the natural current of the river; but the ocean, pressed to the bottom by the superincumbent tides, and thus confined, it scoops out a much deeper bed, so it does in other circumstances where such a pressure does not exist.

(II. Halde's Description Geographique, Histoire Chronologique, &c. de l'Empire de la Chine; Stanhope's British Embassy to China; Barrow's Travels in China; Ellis's Journal of Lord Amherst's Embassy to China; Beadon's Narrative of a Journey in the interior of China; Bocaut's Relatifs à l'Asie; Bitter's Deutsche Asien, vol. III.)

YANNINA. [Joannina.]

YAOORI. [Soudan.]

YARE. [Nauru.]

YARKIAN, or YARKAND. [Tian Shan Nt.]

YARMOUTH, or GREAT YARMOUTH, a borough, parliamentary borough, and municipal borough, county, county borough of Norfolk, and hundred of East Pakefield, in N.E. from London, by the road, 22° 36' N. lat. 1° 18' long.

Great Yarmouth is situated near the confines of the rivers Yare, Waveney, and Bure, which form a lake of the Brandy Water to the north-west of Yarmouth. The greater part of the town is on the east bank of the Yare; but it extends also along the east bank of the Bure, to Yarmouth, being contained within a boundary which included in the boundary of the municipal borough. The new bridge has just been commenced (November, 1850). The town is extending beyond the limits of the old walls, to the north towards Caister, and to the south towards Gorleston, a borough, which is a mile to the east of the old walls, between the old town and the sea. The village of Gorleston, to the south, near the mouth of the now connected with South Town.

The town of Great Yarmouth, within the boundary of the old walls, consists of three principal lines of streets, nearly parallel with the river, and of about 150 narrow lanes, or rows, which form the communications between the streets. The rows are extremely narrow, the length of the two rows being not more than eight feet wide, and impassable for ordinary wheel-carriages; the greater part of the traffic of the town is therefore carried on 'Yarmouth carts,' which are peculiarly constituted, low wheels, and adapted to the width of the rows: they are drawn by one horse, and look like sledges, but are red
ailled for conveying heavy goods. Some of the rows have been enlarged, particularly one near the middle of the town. There is an arcade of shops, and the principal streets are wide, and the houses are mostly well built, but the most substantial and handsome houses are situated along the quays. The provision-market is spacious; an open space near the town-hall is used for the weekly market, which is held on Wednesday and Saturday. The chief sales of corn are on Saturday. East of the town, next the sea, are a great number of houses, many of them large and some handsome, which are used as seaview mansions and summer seats.

Yarmouth as a bathing-place, certainly the best on the coast of Norfolk. The town beyond the walls consists chiefly of houses of the poorer classes, intermixed with warehouses, and is not paved, and only partly lighted by gas. It has 50 tons and three above 50 tons. The chief exports are fish, wood, and salt. South Town consists for the most part of good houses, but is only imperfectly paved and lighted, and Gorleston is neither paved nor lighted.

The river Yare, falling into the sea about two miles and a half south from Yarmouth, and the Bure, extending to the north from Braydon Water, form a kind of peninsula between the rivers and the German Ocean, near the centre of which the town of Yarmouth stands. The peninsula is low and formed of clay of some depth, and not more than 3 to 4 ft. in depth on the period Braydon Water was an open bay of the sea. The harbour is in the river Yare. There are no piers, South Pier and North Pier. South Pier is the larger; it is about a quarter of a mile long, well constructed, and previous to the Monthly Meeting the entrance of the river; but vessels drawing twelve feet of water, or about 200 tons burthen, can pass it at high water, and sail up to the town. The quay, taken in its whole extent, is one of the finest in the kingdom; it is in some parts bordered by handsome buildings, plentiful with trees along the centre. It is one of the largest parish churches in the kingdom, with three wide aisles and a chancel which include a great number of seats. The building was completed and consecrated on Easter Sunday, 1662. [Organ, xxvi. 2.] It was founded in the beginning of the 11th century as a chapel to the church of the Holy Trinity at Norwich, which had then a cell at Yarmouth. The living is a perpetual curacy, in the gift of the dean and chapter of Exeter; the whole of the income of the parish of Yarmouth and Great Yarmouth belongs to the dean and chapter of Norwich. St. George's church was built in 1716, under authority of an Act of parliament. The living is a curacy, and was in the gift of the corporation of Yarmouth, but they have recently sold the presentation, which is valued at 230l. a year.

St. Peter's, which was erected under the commission for building new churches, is a perpetual curacy, in the gift of the incumbent of St. Nicholas, and is of the net annual value of 160l. There is a small church in South Street, called St. Mary's church. The Wesleyan Methodists, Baptists, and other classes of dissenters have places of public worship. About one-third of the way from the town towards the mouth of the river is the Nelson column, which was erected in 1817: it is a fluted pillar with a statue of Nelson on top, and is 100 ft. far from the column are barracks, which were built at an expense of 120,000l. The building was used as a hospital after the battle of Waterloo: it is now unoccupied.

The chief business of Yarmouth is in fishery, herrings and smelt being the chief product. Some are conveyed by sea, and some by road. There are manufactures of slate and cork goods, which are sold to employ about 500 persons, chiefly women. Shipbuilding, rope-making, and other trades connected with the port, although small in comparison with the sea trade, are considerable.

The town is a borough with a market on Wednesday and Saturday. The borough is within the liberty of Yarmouth from its commerce as a seaport. It is the chief port for the exports and imports of Norfolk, Suffolk, and part of Essex. Perhaps not more than one-tenth of its shipping is employed in the fishing trade. It has also an extensive inland trade by the rivers Yare, Waveney, and Bure. The Yare is navigable to Norwich, the Waveney to Bungay, and the Bure to Aylsham and Wymondham. The Bure Navigation was opened in Easter week, but it is only for toys and gingerbread.

According to the Education Returns, there were, in 1833, 3 infant schools, with 107 children; 33 daily schools, with 1077 males and females; 1 boarding-school, with 25 females; 1 day and evening school for the deaf and dumb, with 40 females daily, and by 80 males and 50 females on Sundays; and 7 Sunday-schools, one of which was supported by the established church, and the others by different classes of dissenters.

On the 31st December, 1842, the number of sailing vessels registered at Yarmouth was 332 under 50 tons (total burthen 14,195 tons), and 328 above 50 tons (total burthen 36,547 tons); and there were four steam-vessels of 651 tons, and three above 50 tons. The number of sailing-vessels that entered and cleared coastwise from 31 Decr. 1841 to 31 Decr. 1842, was 2347 (total burthen 176,784 tons) inwards, and 1435 (total burthen 77,591 tons) outwards. The number of steam-vessels that entered and cleared was 501 inwards, and 501 outwards, the total burthen inwards as well as outwards being about 24,400 tons. During the same period there entered and cleared for foreign ports 150 vessels (total burthen 14,127 tons), and there were 70 vessels (total burthen 10,452 tons) outwards. Besides which there were five remote vessels inwards from and to the colonies. The net amount of customs-duty received in 1839 was 54,511l. 10s. 10d.; in 1840, the net amount received was 64,731l. 11s. 5d.

The Great Yarmouth Act, 1708, the Great Yarmouth Corporation Act, 1807, and the Great Yarmouth Improvement Act of 1821 consisted of a mayor, recorder, high steward, sub-steward, 17 aldermen (besides the mayor), and 36 common councillors. The first charter, which was granted in 1108 by King John, was confirmed and extended by later charters of Henry VII, Elizabeth, James I., and Anne, which last, granted in 1702, was the governing charter. By the Municipal Corporations Act the borough is divided into six wards, with 12 aldermen and 36 councillors. The borough of Great Yarmouth, which includes the borough of Yarmouth, comprises an area of 1270 acres. In 1841 there were 5183 houses inhabited, 104 uninhabited, and 61 building. The number of inhabitants was 24,060, of whom 10,537 were males and 13,523 females. In this number were included 49 persons in the Children's Hospital, 6 in the Royal Hospital, 223 in the workhouse, and 37 in the house of correction and borough gaol; but 173 mariners were not included. The population in 1801 was 14,485; in 1811 it was 17,977; in 1821 it was 18,047; in 1831 it was 21,115.

The parliamentary borough of Yarmouth returns two members to the House of Commons, as it did before the Reform Act, but the limits are now extended so as to include the whole of the borough. The number of parliamentary boroughs in 1841 was 27,550. The number of parliamentary electors on the register in 1835-6 was 1719; in 1840 the number was 1904, of whom 742 were 101, householders, and 1162 were freemen or were otherwise qualified to vote.

In the session of 1842 an Act was passed for making a railway from Yarmouth to Norwich. It is to be a single line, and it is intended to adopt the electric telegraph on it. By this Act so much of the Eastern Counties Railway as lies between Norwich and Yarmouth is superseded, and it has been projected to extend the line to Cambridge, but an Act has not yet been passed.

From the 1855 Book it appears that Yarmouth was a roadless demeans, to which belonged 70 burgesses. Henry III. granted a charter, with permission to fortify the town with a wall and moat. The wall had ten gates, and was strengthened with sixteen towers. The place must have been populous in the days of the Saxons, for less than 100 persons died there of the plague in 1348. In 1598, on the alarm of the Spanish Armada, a fortress with four towers, whence beacons might be displayed, was erected in the middle of the town. In 1621 platforms were constructed towards the sea, on which great fires were burnt.

As the navigation off the coast is dangerous, two beacons are kept in Yarmouth Roads. (Municipal Corporation Boundaries; Report on Statistical Returns; Population Returns; Party Documents.)
YARMOUTH. [WIGHT, ISLE OF.] 

YARN is the general name given to the threads which are woven into the various kinds of textile fabrics, whether cotton, silk, flax, hemp, wool, or worsted; the terms twist, mule-sheaf, organdine, tram, am, fine, &c., being particular names applied to particular sorts. A few words of explanation will here suffice supplementary to the details interpersed among earlier articles.

Yarn for cotton-weaving is of two distinct kinds, according as it is intended for warp or weft; each kind being varied to suit different fabrics. Water-twist or throttle-yarn (the first name having been derived from the water-frame by which this kind of yarn was formerly spun, and the second from the throttle employed) is non-twist, flax-yarn, and wiry, and is usually employed for warp in heavy goods, such as fustians, cords, or, for making sewing-thread. Mule-yarn (named from the 'mule' machine by which it is spun) is of a soft and downy nature, calculated for the warp in coarse goods, and for both warp and weft in finer fabrics. Arkwright's name is especially connected with the improvement of this kind; while Crompton effected most in advancement of the second. The spun yarn is distinguished by certain numbers, which indicate the number of ends or filaments contained in one pound, or in one, each half, or quarter of a pound, of 840 yards of yarn. The two kinds of machines are adapted for different numbers; thus, the throttle is not now often employed for yarn finer than No. 30 or 40, the higher numbers being generally spun by the mule. By substitution of these with others, and the movements in the machinery employed, the yarn is spun to so high a number as 250; and instances have been known of 167 miles of yarn being spun from one pound of cotton! In a modern throttle-frame, spinning No. 30, from 24 to 50 hands per spindle can be spun in eight hours, and from 69 hands with a mule the quantity varies greatly under different circumstances. The excellence and cheapness of the yarn spun by modern machinery has led to very large exports; thus we find from the Report of the Parliamentary Papers for 1842, that the quantities and declared value of cotton twist and yarn exported for ten years were as follows:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1831</td>
<td>lbs. 63,621,440</td>
<td>£3,975,019</td>
</tr>
<tr>
<td>1832</td>
<td>75,627,150</td>
<td>4,725,759</td>
</tr>
<tr>
<td>1833</td>
<td>70,626,101</td>
<td>4,704,024</td>
</tr>
<tr>
<td>1834</td>
<td>76,748,459</td>
<td>5,211,615</td>
</tr>
<tr>
<td>1835</td>
<td>82,314,198</td>
<td>5,708,389</td>
</tr>
<tr>
<td>1836</td>
<td>88,191,046</td>
<td>6,120,366</td>
</tr>
<tr>
<td>1837</td>
<td>103,455,138</td>
<td>6,955,142</td>
</tr>
<tr>
<td>1838</td>
<td>114,506,602</td>
<td>7,431,569</td>
</tr>
<tr>
<td>1839</td>
<td>105,986,146</td>
<td>6,858,193</td>
</tr>
<tr>
<td>1840</td>
<td>118,470,223</td>
<td>7,101,308</td>
</tr>
</tbody>
</table>

It would be a curious inquiry, how many millions of miles of cotton yarn are exported every year; but this could not be determined without knowing the average of all the Nos. so exported.

Flax-yarn is not estimated by No., as cotton, but by numbers of bales of spinning. Three hundred yards form a bale of flax-yarn; 38 bales form a spin; 6 bales form a rand; 22 bales, or 21,600 yards, or 12 rands, form a dozen. In the process of preparation by spinning, the flax becomes separated into two qualities, the finer obtaining the name of fine, and the coarser that of tow; and the yarn spun from these two qualities is applied to different purposes. The spinning of flax-yarn is mostly effected by the bobbin-and-fly or throttle-frame; and modern improvements have led to the production of such fine qualities of tow that it is now used in combination with silk in pocket handkerchiefs and other fabrics.

With regard to hemp, besides the yarn employed for weaving into sacking and other coarse goods, the term 'yarn' is applied in rope-making in a different sense. The yarn in this case is in a loose kind, seamed, or cord, and it receives the No. according to the number of such strings required in making ropes three inches in circumference; thus, No. 18, 20, or 25 imply such thicknesses of yarn that an 18, 20, or 25 of these are required in making a rope of the dimensions just stated.

Silk-yarn has names applied to it not known in the examples just given. The silk is imported as a fine filament, or in the state of raw silk; it is twisted as a means of giving it greater firmness of texture, and then obtains the name of singles; two filaments are twisted together rather loosely, and formed into a yarn called tram, which com-

monly forms the weft or cross-threads of manufactured goods; lastly, two or more filaments are twisted separately into hard singles, and then twisted together in an opposite direction, forming a strong silken yarn called organzine, used generally for warp. Silk-yarn in the form of tram, organzine, that is, ready for the weaver, is called thread silk; and in this state much of our silk used to be imported; but since the removal of the import duties restrictions formerly laid on the trade, the raw silk imported bears very much a larger ratio to our throw yarn. Within the last few years, come largely into use in the preparation of yarn for the weaver; that is, the knotted, broken, or imperfect filaments which cannot be used in a throw form. Various kinds of yarn are now carded, roved, and spun much in the same way as cotton; and most of the cheap silk goods now sold in this country are made from yarn so prepared, not unfrequently mixed with cotton.

Yarn made from wool is called woolled or worsted, according as it is formed from short or from long wool, for clothing or from combing wool. The former of these so spun that the elementary fibres shall be in a finest feltin or fulling; while the latter has the filaments more or less twisted together, and the turns of the yarn are now carded, roved, and spun much in the same way as cotton; and most of the cheap silk goods now sold in this country are made from yarn so prepared, not unfrequently mixed with cotton.

Yarn made from mule is called mule-yarn, and is formed as it is from short staple of cotton, for clothing or from combing wool. The former of these so spun that the elementary fibres shall be in a finest feltin or fulling; while the latter has the filaments more or less twisted together, and the turns of the yarn are now carded, roved, and spun much in the same way as cotton; and most of the cheap silk goods now sold in this country are made from yarn so prepared, not unfrequently mixed with cotton.

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YAR

eastward to Kostroma. At Rybinsk, between Mologa and Yaroslavl, it is joined by the Sekelina. All the rivers of the government flow into the Volga. The Mologa and the Sekelina are by far the most considerable. The lakes are 38 in number. The largest are those of Rostov (or Nero's) which is eight miles long and about five and a half broad, and the Nanchonero. There are many rivulets; and the whole government is not very well watered. The climate is rather severe: the winter, spring, and autumn short; the summer hot, and the purity of the air is very favourable to vegetation and to the health of the inhabitants.

The agriculture is the chief occupation of the inhabitants. The soil is on the whole only moderately fertile, and the corn produced is far from sufficient for the consumption of the inhabitants. Though the ground requires to be well managed everywhere, yet the want of eye and barley can be expected to yield sixfold, and generally four or five fold. Wheat and buckwheat yield only two or three fold. Oats are grown in large quantities; and Hemp, flax, hemp, and tobacco, paper, soap, and candles. There are many tanneries. The principal articles of export are Russia leather, sailcloth, the cloth called raven-duck, linens, cloth, some linned and linned sal, salt meat in large quantities, and horseshair; the imports are cotton, silk, Venetian, Russian, and English wool, manufactures, and manufactures. This gives rise to a very brisk trade. Yaroslavl, Rybinsk, Rostov, and Uglitsch are the greatest share in this trade.

The inhabitants are almost all Russians. The men are tall and handsome; the women are agreeable; White women, like a woman of Yaroslavl, is a common saying. They are of the Greek church, under the archbishop of Yaroslavl and Rostov, whose diocese is of the second class, and contains 833 parishes. The schools in this government are many, and their number has gradually increased since the beginning of this century, education is still in a very backward state. In 1832 (the latest date quoted by Schnitzer is 1835) there were 19 schools, with 72 monitors, of which 30 are ecclesiastical schools, with 38 masters and 1607 scholars. Kruzenstern, in 1837, does not afford later information.

YAROSLAV, the capital of the government, is situated, according to Hall, in 57° 25' N., and is surrounded by many stone houses, its 44 churches and three monasteries, gives it a striking appearance. It is however ill-built, in the Russian fashion, with narrow streets, some of which are principal streets, and the town is growing from St. Peterburg, is broad, and consists of handsomely done stone houses. The institutions for education are, an ecclesiastical seminary with 600 pupils, a gymnasium, a district school, and a school for the higher branches of learning, founded in 1803, by Prince Paul Demidoff, who endowed it with a capital of 300,000 silver rubles, and 3600 peasants.

It is called the Demidoff Lyceum, according to the revised statutes, which were carried into effect in 1834; they determine that there shall be a director, a chaplain, and eight professors, and that the number of students on the foundation, who are boarded and educated free of expense, shall be forty. After their education is completed they enter the public service. The lyceum has a very good library. There are in this city eighteen poor-houses, a foundling asylum, and a Bible Society. The manufactures are clothing; the linen and Russian leather of Yaroslavl are highly esteemed. It is the residence of the civil governor of the province, and of the military governor of Yaroslavl and Vologda. Its trade is of very considerable, and the merchants have a large bander. The population is 98,500 inhabitants.

The other towns worth notice are: 1. Rostov, situated on the lake of the same name (otherwise called lake Nero), one of the most ancient towns in Russia. It is six miles in circumference, and shows its former importance. It has several times suffered by war and fire. It now consists of the city and an extensive suburb. The city is surrounded by a rampart and a moat. It is in an unfavourable situation, being low, and surrounded by the river Volga. It is said that the kind of stone which is found here, where he has his principal cathedral, an ancient richly adorned edifice, and a vast palace, with a seminary. There are 24 churches in the city, and three convents, two of monks and one of nuns. Besides the bazaar the city contains 2500 houses, and 10,000 inhabitants. The women are celebrated for their beauty. The trade is very considerable, and the great fair, which begins at the end of February and continues for a month, is attended by at least 40,000 Russians, Armenians, Greeks, and Tartars, who bring goods to the value of 14,000,000 of rubles. 2. Uglitsch, on the right bank of the Volga, is likewise an ancient town, but the time of its foundation is uncertain. It is related that before the invasion of the Tartars in 1620, it contained 1200 houses, 24 convents, and 30,000 houses. The fire which destroyed it at that time annihilated its property. At present it has two convents, 23 churches, and a fortress built of wood. The streets are narrow and crooked. There are 7000 inhabitants, who have a considerable trade, and 16 manufactures.

3. Rybinsk, which has been described in a separate article.

(Hassel; Hörschelmann; Cannabich; Schubert; Schnitzler; Kruzenstern, De l'instruction publique en Russie.)

YARRHA.

YARROW. [SALICORNIA.] YASSY. [MOLDAVA.]

YAZOO, river. [MISSISSIPPI, STATE OF.]

YEAR. Much connected with this article is to be found in KALENDARIOV, or YEAR Book, MOON, SUN, CHRONOLOGY, TIME, &c. We here confine ourselves to matters of useful reference connected with the length and subdivisions of the year, omitting discussion of points of history, which do not directly bear upon chronological reasoning.

The year is, roughly speaking, the period of time in which the sun makes the circuit of the heavens, and of the seasons of agriculture run through their course. In the tropical or civil year is the time in which the sun moves from a star to the same again; that is, the interval between the two times when the sun has the same longitude as a given star. The mean period is 365.2563612 mean solar days, or 365.2422414 mean solar days.

The anomalistic year is the time in which the sun moves from the vernal equinox to the vernal equinox again; and its mean length is 365.2422414 mean solar days, or 365.2422414 mean solar days.

The tropical year is the time in which the sun returns to its position (or nearest point to the earth) to its perigee again; and its length is 365.2595981 mean solar days, or 365.2422414 mean solar days.

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sun is not nearest to the earth until it has passed the longitude at which it was nearest to the earth before. The tropical year is the year, when no distinctive term is applied; for the passage of the sun from the southern to the northern side of the ecliptic is the positive phenomenon on which it depended, though it is not correct to say that it is then that the succession of seasons begins.

The anomalistic year does not, and from the theory of gravitation most probably cannot, vary by any quantity which the human senses could appreciate; but the sidereal and tropical years vary very slowly in length. The reason is twofold. In the first place, the amount of the yearly precession of the equinoxes is slowly increasing; so that the part of the orbit by which the equinox moves backward to meet the sun becomes greater, or the duration of the year less. In the second place, the gradual motion of the equinox, combined with that of the perigee, brings the part of the orbit which the sun is saved from performing by the recession of the equinox into different planes with respect to the perigee in successive years; so that the excepted portion is in different years what would have been described in different times. The second consideration affects the sidereal year as well as the tropical; but since the both cause the effect is very small and slow, a few seconds in a thousand years, there is no occasion to do more than point it out in an article like the present. LaPlace makes the tropical year to be 13 seconds shorter than what it was at the time of Hipparchus.

The excess of the tropical year over 365 days has been given by different astronomers as follows:—

<table>
<thead>
<tr>
<th>Name</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euctemon and Meton</td>
<td>6 18 57</td>
</tr>
<tr>
<td>Hipparchus and Ptolemy</td>
<td>5 50 12</td>
</tr>
<tr>
<td>Hipparchus</td>
<td>5 50 30</td>
</tr>
<tr>
<td>Albany</td>
<td>6 48 10</td>
</tr>
<tr>
<td>Walther</td>
<td>5 48 50</td>
</tr>
<tr>
<td>Tycho Brahe</td>
<td>5 48 45</td>
</tr>
<tr>
<td>Delambre</td>
<td>5 48 51-6</td>
</tr>
<tr>
<td>Laplace</td>
<td>5 48 49-7</td>
</tr>
</tbody>
</table>

Whether the present length of the tropical year can be said to be determined within a second, we cannot collect from the writings of astronomers. The method of determining this length is by carefully observing solstices or equinoxes (that is, when the sun is in the solstices or equinoxes) at distant periods, and taking the mean year from the whole interval elapsed. Unless that interval were a whole revolution of the solar perigee with respect to the positions or fixed stars, the mean tropical year could not be determined, from observation alone, so well as it might be.

The civil year must, for convenience, begin with a day, and contain an exact number of days. But any exact number of days would have the disadvantage of the old Egyptian year (Soronic Period), namely, that the seasons would be thrown to all parts of the year in succession. Those who lived in the intense heat of March (when that month is near the autumnal equinox) would read old poets, to describe the spring as about to arrive, in that month, and abide to the past winter, and that before the poets would have become properly antient: this alone would be worth avoiding. Of the mode of doing it we shall presently say more, but in the meanwhile we have to observe that the real mean tropical year could not be determined, from observation alone, so well as it might be. The solar perigee with respect to the positions or fixed stars, the mean tropical year could not be determined, from observation alone, so well as it might be.

The Jewish, Christian, and Mohammedan religions all regulate their sacred anniversaries, more or less, by the mean tropical year. They have divided their year into months, according to the lunar revolution, though most of them have accommodated their years to the solar year by intercalated months. Now the time between two new moons, that is, the average time, is 29-5305897 days, or about 291 days. If then months were alternated of 29 days, twelve months would contain 344 days, and 11 1/4 days would be necessary to complete the Julian year of 365. This would amount to more than a month in three years. Taking the most exact values both of the lunar year and the solar year, and applying the method in Fractions, it will be seen that the year contains, over and above twelve months, something less than 3 months in 8 years; more exactly, something more than 4 months in 11 years; more exactly, something less than 7 months in 19 years; more exactly still, something more than 12 months in 334 years, less than 130 in 353, more than 23 in 567, less than 1356 in 2878. Taking the Julian year of the above figure as 365.25 days, we have less than 7 months of 19, less than 17 out of 40, less than 171 out of 400. The excess of 7 months in 19 years, which varies very little from the truth, whether as to the real, Julian, or Gregorian year, is the foundation of the celebrated Metonic Cycle, which, among the Greeks and all who have derived knowledge from them, has always been the foundation of the lunisolar calendar. It is now well understood that the Metonic moon, and not that of the heavens, is referred in the settlement of religious festivals; that also, a moon moving uniformly at such a rate as to make 235 lunations in 19 calendar years.

Owing to the alternation and retardation of the sun's motion in its orbit, the lengths of the four-annum seasons are different as follows:

- From vernal equinox to summer solstice: 92-29
- From summer solstice to autumnal equinox: 93-14
- From autumnal equinox to winter solstice: 91-16
- From winter solstice to vernal equinox: 93-11

We shall now state the principal facts connected with the years of the nations who are most connected in history.

The Jews, from the time of their departure from Egypt, began their year with the vernal equinox in all their reckonings, retaining the old beginning, which was the autumnal equinox, in all civil purposes. They reckoned from the new moon near the equinox, making twelve months in the year, each of 29 or 30 days, with an intercalary month once in three years, the Jews deriving themselves from the necessity of any but a sidereal circulation. They in this year determined the beginning of the year to slide away from the vernal equinox, but this their rites prevented them from doing, and the sacrifices required the offering of various species of agricultural produce, dependent upon season. They had also at times of the year: the necessity of providing young lambs, for instance, at the Passover, obliged to keep this feast at one time of the solar year, and not at the full moon following the vernal equinox, by which they managed their calendar in the first instance does appear; but as we know they once depended upon seeing sight of the new moon to settle the beginning of a month, and only used the 23 or 30 days when they fixed their object, we must infer that they were in the habit of making the intercalary month something that could be done, as remarked 'by the editor of the Verifier les Dates,' while they were in possession of the time, and within reasonable distance of each other.

There is not any trace of astronomy in the old writings of the Jews, and we are at a loss to know of any knowledge of it from Egypt. But during the Captivity they acquired from the nations among whom they were thrown, either a period of 84 years or knowledge to construct one. Several of the Fathers mention this period, and state that it had long been used by them. The first has the appearance of a Calippic Period of 76 years but a day, with the period of 8 years added, in the position that the making of three intercalary months would be as the regular sources of chronology, and only after this contained in the Calippic period. But it is not the case, and 84 years is really not so near an exact number of lunations as 76 years but a day, nor of the early Christians used this period, and therefore not a correct period, and they were therefore corrected by the Emperor Augustus. Easter, which afterwards was corrected by the Council of Nice.

The modern Jewish calendar is regulated by the revol of nineteen years, and its lunar years contain various sects which refer to the religious ceremonies. They are presented as an exact date by the Jews, reckoning from the beginning of the month of Nisan, much more easily found than the Hipparchian. Ptolemy had 29d. 12h. 44m. 3s.; reject the fraction, as we so often done, and we have the Jewish value; and it happens that Ptolemy and Hipparchus had got just a little.
more than the fraction too much, this saving of trouble is an accidental correction. There is no accompanying value of the sun's motion more correct than that implied in the Julian.


The Hebrew calendar, or common sex of England, are.

The English months in which they severally most frequently begin, with their number of days:

<table>
<thead>
<tr>
<th>Month</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>30</td>
</tr>
<tr>
<td>April</td>
<td>30</td>
</tr>
<tr>
<td>May</td>
<td>31</td>
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<tr>
<td>June</td>
<td>30</td>
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<tr>
<td>July</td>
<td>31</td>
</tr>
<tr>
<td>August</td>
<td>30 or 31</td>
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<tr>
<td>September</td>
<td>30</td>
</tr>
<tr>
<td>October</td>
<td>31</td>
</tr>
<tr>
<td>November</td>
<td>30 or 31</td>
</tr>
<tr>
<td>December</td>
<td>31</td>
</tr>
</tbody>
</table>

For the Egyptian year, see SOTHIC PERIOD.

The twelve months of the Athenian lunar year bear the following names: but there is a slight difference of opinion about the order in which they come, some putting:

1. **Greek**:
   - January
   - February
   - March
   - April
   - May
   - June
   - July
   - August
   - September
   - October
   - November
   - December

2. **Roman**:
   - January
   - February
   - March
   - April
   - May
   - June
   - July
   - August
   - September
   - October
   - November
   - December

This is reckoned by its position with respect to the next simply denominated day, be it Kalends, Noneis, or Nones. Thus the third day before the Nones of January, the day of the Nones itself counting as one, is **ante diem tertium nonum Januarias**, a singular mode of speech, which does not appear to have been fully explained. It is generally rendered as if it were diem tertium ante Nones Januarias, the third day before the Nones of January. These designations are usually written in a contracted form in the manuscripts, and these contractions are usually all that are to be found in chronological works. (See Collin. ii. 2.)

**Reference**

- Aprilis, Maius, Junius, Julius, Augustus, September, October, November, December.
- The first of each month is its kalends, Kalendae Januarii, February, &c.
- The number of days in each month is well known by the old rhyme. The 13th of some months, the 16th of others, is called the day of the Ides (Idus): and the ninth day before the Ides inclusive is called the nones: Noneis, and every day is reckoned by its position with respect to the next simply denominated day. Thus the kalends of January, the day of the Nones itself counting as one, is **ante diem tertium nonum Januarias**, a singular mode of speech, which does not appear to have been fully explained. It is generally rendered as if it were diem tertium ante Nones Januarias, the third day before the Nones of January. These designations are usually written in a contracted form in the manuscripts, and these contractions are usually all that are to be found in chronological works. (See Collin. ii. 2.)
<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>i</td>
<td>ii</td>
<td>iii</td>
<td>iv</td>
<td>v</td>
<td>vi</td>
<td>vii</td>
<td>viii</td>
<td>ix</td>
<td>x</td>
<td>xi</td>
<td>xii</td>
</tr>
</tbody>
</table>

The intercalary year, when introduced by Caesar, had the additional day bestowed upon it by doubling the sixth day before the kalends of March, whence the year was called *bissextile* (BISSEXTILE) so that the month of February ended thus—

|----|------|------------|

There was thus ante dies sextum kalendas Martias posteriorum et ante diebus sextus kalendas Martias priorum. The general rules of this clumsy calendar are, that the ides are on the 15th of March, May, July, and October, and on the 30th of all the other months: that the nones are always on the eighth day before the ides, according to our mode of counting: that the kalends are always on the first day of the month: and that the intermediate days are numbered as before. As numbering is required, backwards from the kalends, nones, or ides, each of these reckoning was always in counting backwards from the ides.

The original Roman year is variously stated by historians at twelve and ten months: the latter seems the best supported and the old year wanted by Caylus and Foucher, and had Quintilius and Sextilius in place of July and August: these two months yielded their names to those of the two emperors who reformed the calendar. Numa Tarquin introduced what was meant for a lunar year of 350 days. The year is supposed to have been related to the solar year by the decemvirs: but there is great deal of discussion upon all these points, which will be quite out of place in anything but an historical notice.

In the year 45 B.C., the correction made by Julius Caesar with the assistance of Bombæus, was indeed the preceding year having being lengthened into 445 days, order probably that the new era might fall at the moon following the shortest day. The pontiffs named who came after Julius Caesar made the meaning of the correction equal to a bissextile day. This year was said one every fourth year, counting the last bissextile, according to their interpretation of Caesar's nickname which the fourth numbers beginning from I was not 6, 9, 13, &c., but 4, 7, 10, &c. This was corrected in Augustus, when Pontifex Maximus &c. decided that three bissextiles from that date should be called (being as many as had been then superadded to the calendar in years preceding), and that the mistake should be avoided in future.

No further chronological difficulty occurred until the third century, when disputes about the mode of determining Easter-day began to perplex the Christian world. It is commonly stated that the Council of Nice made the adjustment which lasted until the Gregorian reform. This is not correct: the council, according to Eusebius, others, only ordained that all Christians should keep Easter on one and the same day, and referred it to the bishop of Alexandria to settle what, agreeably to the remembrance of the subject, that of the event shall be in each particular year. By what follows, it appears that this point adopted the Metonic cycle, and he certainly could not have done better, having no licence to make a fixed independent of the new moon.

The Gregorian reform (so called;) we will not to give reasons for our protest against the word; was consequence of the desire that the seasons remained in the same months for ever. The Julian calendar gave a year which is too long at the rate of 3 days in years nearly. At this rate, in 24,000 years such a midwinter would have fallen in December. It was not so much to avoid this, so to keep the festival in the same parts of the year, that is, in the same kind, that the correction was insisted on. The change has been discussed by individuals and even by councils during preceding centuries, and was finally decided on by Gregory XIII, with the authority of the Council of Trent. In 1582 the reformation was carried into effect: ten days were struck out of the reckoning which would have been the 5th of October being denominated the 15th, so that the days 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 of October, 1582, never existed in Italy, Spain, which accepted the change as soon as so to be speedily. In the Alphabetic tables, which were consulted, are by a day in this matter, and even the episcopal tables have been suppressed. The consequence is (Porson or Ravenrous p. 449), that the equinox varies between the 22nd and 23rd of March.

Leaving out the parts of the Gregorian calendar which relate to Easter, we proceed to the alteration of intercalation. This is as follows:
number is divisible by 4 is leap-year, except only when
the number ends with 00, in which case it is not leap-year,
except when the preceding figures are divisible by 4.
Thus 1800 is not leap-year, but 1804 is.
If we take the
most recent value of the length of the year, 365.2422144
mean solar days, and apply the method in Fractions,
Convoluted, we shall see that the excess of the real year
above that of 365 days is something less than 1 day
in 4 years, more than 7 in 29, less than 9 in 33*, more
than 35 in 150, and less than 242 in 999. This last excess,
225 days, is so very remote, that it is most
fortunate that Gregory’s advisers did not know it, for they
would in that case have adopted it and saddled our world
with a most troublesome omission of intercalations for the
benefit of posterity of fifty thousand years hence. As it is,
the excess of 1000 mean Gregorian years above as many
of 365 days is 2:2:5 days: it would have been nearer the
truth had it been 242:242 days. Accordingly 1000 mean
Gregorian years are too long by about a quarter of a day;
more correctly, 3600 years give an error of a day. De-
lambre proposed that the Anni Domini 3600, 7200, 10,800,
&c. should not be leap-years, which they are to be in the
Gregorian calendar. If the world should last till A.D. 3600,
we hope the correction will be called by Delambre’s name:
by this time a hound then has perished, still more will
that of the present article, so that there is no use in pro-
pointing the point.
The European years have been made to begin at such
different periods, that the historical inquirer is frequently
perplexed; and those which relate to our country
in Periods of Revolution, p. 440. The 25th of
December, the 1st of January, the 1st of March, the 25th
of March, and Easter, have all been in use.
In regard to the common year as it now stands, there
seems to be no law by which it will be used, or by
which it will be corrected. We can hardly forbear to quote the verses which are so
exceedingly in use, but we will do it from a version of 1596;
DAYS OF THE WEEK.

Turkev, p. 405, does very well to determine the com-
mencement, except that when the Christian year con-
tains the commencements of two Mohammedan years,
the rule will only give one: the other however may
easily be inferred.
When the comparison of dates is to be very close, an easy rule will be sufficient, and
recourse must be had to either in the list in the ‘Art de
vérifer les Dates,’ or to the rule and supplementary
tables in the ‘Companion to the Almanac’ for 1830.
The year 1 of the Hegira begins from July 16, 622, and the year 1200 begins January 10, 1844. But two
years after the year A.D. 1583 (911 of the Hegira: the ‘Art de
vérifer les Dates’ gives two commencements for every
year (the second twelve days later than the first), which
it says, according to the old calendar and the new one:
no mention is made of this distinction, that we can
find, in the introduction to that work, nor in other common
sources. Our ‘Nautical Almanac’ gives the commence-
ments according to the new calendar.
The unwonted attempt made by the French, during their
first Revolution, to alter the names and dispositions of the
years and months, might now be quietly consigned to ob-
liation, if we were not that many excellent works bear the
revolutionary dates upon their title-pages, and political
conferences are frequently referred to them during the
short period of their Descent. The year 1 of this period
was made to begin September 22, 1792; each period of four
years, or Franciad, had an Olympic or bisextile at its
end. The three omitted leap-years of the Gregorian correction
were to be very much like the rule as before, and the years
ending with 00: and the 4000th year was not to be
leap-year. The year consisted of 12 months of 30 days
each, with five sacred days at the end, dedicated to
Virtue, Genius, Labour, Opinion, and Reward; the bi-
eximal or double day being appropriate every fourth year to the re-
newal of the oath of Liberty. Each month had three
days. The months were—

<table>
<thead>
<tr>
<th>Vendémiaire</th>
<th>Brumaire</th>
<th>Frimaire</th>
<th>Nivose</th>
<th>Pluviôse</th>
<th>Ventôse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 22</td>
<td>Oct. 22</td>
<td>Nov. 21</td>
<td>Dec. 21</td>
<td>Jan. 20</td>
<td>Feb. 19</td>
</tr>
<tr>
<td>Germinal</td>
<td>Floréal</td>
<td>Prairial</td>
<td>Misdien</td>
<td>Fér PVor</td>
<td>Thermidor</td>
</tr>
<tr>
<td>March 21</td>
<td>Dec. 31</td>
<td>May 20</td>
<td>June 19</td>
<td>July 19</td>
<td>Aug. 18</td>
</tr>
</tbody>
</table>

The sense of this nomenclature was exceeded by the wit
of an English parody, in which the winter months were
called Freezy, Wheezy, Breezy; we forget the rest.
The years were as follows:—

<table>
<thead>
<tr>
<th>An I.</th>
<th>An VIII.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 22, 1792</td>
<td>Sept. 22, 1800</td>
</tr>
<tr>
<td>XII.</td>
<td>IX.</td>
</tr>
<tr>
<td>1793</td>
<td>1790</td>
</tr>
<tr>
<td>XIII.</td>
<td>X.</td>
</tr>
<tr>
<td>1794</td>
<td>1791</td>
</tr>
<tr>
<td>XIV.</td>
<td>XI.</td>
</tr>
<tr>
<td>1795</td>
<td>1792</td>
</tr>
<tr>
<td>V.</td>
<td>XII.</td>
</tr>
<tr>
<td>1796</td>
<td>1793</td>
</tr>
<tr>
<td>VI.</td>
<td>X.</td>
</tr>
<tr>
<td>1797</td>
<td>1794</td>
</tr>
<tr>
<td>VII.</td>
<td>IX.</td>
</tr>
<tr>
<td>1798</td>
<td>1795</td>
</tr>
</tbody>
</table>

But An XIV. did not live half its days: for on Jan. 1,
1806, the Gregorian calendar was resumed, and the
republic, which had legislated for the 4000th year of its exis-
tence by name, wore its own liver just one day and a
quarter for every one of those years.
YEAST, or FERMENT, a substance which is deposited
in an insoluble state during the fermentation of wine,
beer, and vegetable juices. This substance, as is well
known, is employed to produce fermentation in saccharine
solutions. According to Liebig, the insoluble part of
yeast does not cause fermentation, for he states that if it
be carefully washed with water, care being taken that it
is always covered with water, the residue does not produce
fermentation.

Ferment, according to the same authority, does the so-
luble part of yeast excite fermentation until it has been
allowed to cool in contact with the air, and to remain some
time exposed to its action; if this state of the fluid is
increased in solution of sugar it produces brisk fermentation.

Ferment is a product of the decomposition of gluten, and
when added to a solution of pure sugar, it gradually dis-
appears: but when added to a solution of sugar which con-
tains gluten as well as sugar, it is reproduced by the dis-
position of the gluten, in the same way as it was origi-
nally formed.
According to Professor Graham, the action of yeast and all other fermenters is destroyed by the temperature at which water boils, by alcohol, by acids, salts of mercury, sulphurous acid, chlorine, iodine, bromine, by aromatic substances, volatile oils, and particularly empyreumatic oils. Smoke, and a decoction of coffee; these bodies in some cases combining with the ferments or effecting their decomposition.

YEDO. [JAPAN.]
YEKATERINOSLAV. [ERKATERINOSLAV.]
YELOW. [Calleco Painting; Dysing.]
YELOW, FEVER, a disease of frequent occurrence on the eastern and western coasts of America, in the West Indies, in Africa, and in Europe on the southern shores of Spain. The prevalence of this disease in these countries, its great fatality, and the mortality it produces in navies and armies, have attracted much attention towards it both from governments and medical men. This disease has been described under other names, such as typhus icterodes, Buban fever, bilious remitting fever, vomito negro, vomito prieto, endemial cases, mal de grain, &c. Although this disease has a very distinct history, and can be easily distinguished by the mass of symptoms it presents, yet it is difficult to give in a few words anything like a satisfactory definition of the disease, or to state one of the more recent attempts on this subject, gives the following definition: a disease in which yellowness of the skin, partial or general, and towards the fatal termination, vomiting of a black or dark brown fluid, are frequent symptoms. There is no means consentaneous to this disease, and the fever would be of little use for distinguishing the disease, and perhaps after all it will be found that yellow fever is only a modification, under peculiar circumstances, of some primary form of disease in which all others originate. It is certain that this disease has many symptoms in common with other fevers, and that it assumes the types of the common, continued, remittent, and intermittent fevers.

It has only been within a comparatively recent period that this disease has attracted much exclusive attention, and on this account some writers regard this disease as one altogether of modern origin, and fix the date of its generation during the latter part of the eighteenth century. But although no accurate account of this disease as distinguished from other fevers exists, previous to its appearance in the island of Grauuda, in 1793, yet there can be no doubt that the records of the occurrence of destructive fevers in those districts in which the yellow fever now occurs, refer to the same disease.

The record of yellow fever is mostly preceded by well-marked premonitory symptoms. For two or three days previous to the attack there is a depression of spirits and an unnatural inactivity without any sufficient accountable cause. There is sometimes nausea with a creeping sensation in the loins, back, arms, face, and head. The eyes are suffused, dull, and heavy, and the sight is dim and sometimes double. There is often slight confusion of mind and a kind of drowsy restlessness. The appetite is bad, the taste is perverted, and the bowels are either confined or relaxed. The skin is in some cases permanently dry, or there may be sweating after slight flushes of heat. The pulse varies considerably; it may be small, quick, irregular, or soft and full. Such symptoms do not appear to be those of an affections of the heart, but the ap¬peared immediately with a shivering, the indication of the near approach of the worst symptoms. Sometimes during this premonitory stage there may exist a yellowness of the eyes and of the skin, and also a vomiting of bilious matter.

The commencing of the febrile attack mostly takes place at night; after the shivering, a state of general excitement takes place, which sometimes increases to a very distressing and uncomfortable extent. Pains occur in the head, in the eyeballs, in the back and loins, and cramps in the gastrocnemius muscles. The patient prefers the recumbent position and lies upon his back, but is in a state of great restlessness, frequently throwing his arms about, more especially above his head. The face is usually flushed, sometimes of a crimson hue, and occasionally swollen so as to appear bloated and heavy. The eye has a heavy drunken appearance, is injected, swollen, and moistened with tears; the pupil is generally permanently dilated, and the balls seem protruded as if they would start from their sockets. The skin is in most cases flushed, and warmer than natural. The pulse is accelerated, full, and compressible; in some cases however it is usually slow, and under these circumstances the skin is unnaturally cool. The tongue is swollen and coated with a white mucous paste. Vomiting does not usually occur at this stage. The bowels remain more or less constipated, but easily acted on. The intellectual faculties are more or less deranged. These symptoms last for six to 13 hours, when the second stage may be said to commence. The general excitement sometimes persists, but the com¬mence becomes deeply expressive of some. The congested state of the eye begins to yield, and to place a slight yellow tinge is observed. This généra¬creating till it extends down the face of the member the yellow tinge spreads itself over the whole skin, and to the whole body, according to the complexity of fever, various colours, from a pale lemon to orange or saffron colour. The pulse becomes more thickened in frequency. The coating on the tongue becomes yellow, and this organ towards its root and edges and tips has a clean and dry red appearance. To the stomach now becomes irritable and painful on press. Food is immediately rejected. There is a degree of debility, and in very few cases this is not accompanied with any severe retching. The vomited are generally ingesta and a clear fluid, and sometimes is bile discharged. The alvine secretion is mostly natural. The urine is diminished in quantity as generally the remaining symptoms in the larynx and hunger remain. As death approaches the exhaustion becomes greater, respiration is hurried and noisy, the surface and extremities become cold, and covered with a general clammy perspiration. In some the last moments are marked with a pain and a strong convulsion which no others death is. To come upon the patient unawares.

These general symptoms are by no means present in every case, some having been constantly observed by medical writers, whilst others have never met with in all. Amongst the symptoms which have not been mentioned by some writers as pointing out important differences in the character of the disease, these are inflammatory, adynamic, and malignant. The malignant occurs in full plethoric habits, and the whole the symptoms indicate a greater amount of excitement, activity, and the disease proceeds to a fatal term sooner. The adynamic variety occurs in those who have deficient animal vigour. In this form of the disease the removal of the premonitory symptoms appears to be made to the progress of the disease, and patient sinks in the course of four or five days. The lignant form is the worst of all. From the first the patient seems attacked with death. All the symptoms from the beginning, and most awful. Persons seldom recover from this state, and many die during the first twenty-four hours of the attack.

The nature and origin of the black matter which is so often observed in the tongue and mouth is the subject of much investigation. The most correct view is probably that of Dr. Fordyce, who considered that it was formed with the incrustation of the tongue, gums, and lips caused generally in violent fevers, and that probably the inflammation is produced by the surface of the mouth, even from the duodenum and jejunum. When eaten and given to animals, it produced no bad effect upon them and an atmosphere impregnated with its exhalation do not appear to be injurious. Under the microscope the appearance of minute scales of smoky wire.
ark brown or red colour. It is probably nothing more than the globules of blood broken down, which have oozed upon the surface of the stomach, instead of an ordinary secretion, and perhaps under the influence of severe vomiting. It may frequently be mixed with bile, but it does not appear in the majority of cases to be the character of bile at all.

It is difficult to give any definition of yellow fever, so that it is difficult to give any rules by which it may be distinguished in individual cases from other diseases. Its occurring generally in several individuals at the same time, soon leads to the development of the group of symptoms upon which we are to depend and by which it may be distinguished from allied diseases.

The mortality from this disease is always considerable. It is usually much greater at the commencement of the epidemic than it is at subsequent periods. In some instances, all the cases occurring for the first few days after breaking out of the fever have proved fatal. Sometimes however the disease is very mild, and but few fatal cases occur. The mortality is generally greatest amongst the negroes and mulattoes, the disease being very rare in the white population. As a general rule, however, that which regards its cause has been discussed with the most zeal and bitterness. We cannot here go into any details of this discussion, but the great point in dispute is the contagiousness of this disease. Many of the early writers have denied that it is contagious, and on this account persons who have been exposed to its influence are obliged to submit to the most rigid quarantine regulations. But during the last twenty years medical men attached to the various troops and hospitals where this disease has appeared have almost entirely abandoned this notion, and the result is an increasing conviction of the non-contagiousness of this disease. But whilst there is much evidence to prove that this disease is not communicable by any morbid matter that may be generated in the human body, yet it is a fact, that whilst it is not contagious, yet this cause is too general to account for the exceedingly local character of the disease in many instances. Cases are recorded in which the inhabitants of particular parts of a town, the one side of a street, or even one room of a blockhouse, whilst all the rest of the inhabitants have been affected, the disease under the circumstances is frequently accumulated a yellowish rosily. The lesions in the chest are not remarkable. The pustule is generally distended with air, its mucous surce is occasionally effused with blood, and its vessels reddened. In some cases the latter may be seen, from which by slight pressure oozes a fluid which appears to be the 'black vomit.' The small vesicles participate in some measure in the lesions of the stomach. The liver is sometimes engorged with blood, and sometimes it is hard and dry. The spleen is generally increased in volume and softened.

In the treatment of yellow fever much difference of opinion has prevailed, according to the opinions of those who have been affected. Under the circumstances are frequently the most efficacious treatment. But the first thing to be considered is the necessity to consider the nature of the case, and the most essential point in it is to have the patient in bed. As is most often the case in the treatment of fevers, that in their course exhibit both active and low symptoms, two very different plans of treatment have been recommended: the one antiphlogistic, the other stimulant. Without entering into a theoretical discussion of the merits of these plans of treatment, it may be stated that both may be rendered necessary in various stages of the disease. In the majority of cases the patient will bear blood-letting at the commencement of the disease. The blood ejected is the only mode of passing off, and it is advisable to have recourse to it, as in most cases the stomach is irritable to bear the introduction of medicines. Bloodletting should be carried to the extent of producing a decided effect on the symptoms. As a general rule, this remedy should not be had recourse to after the second day of the attack. The next remedy in importance is mercury. Some of the best writers on yellow fever, and those who have had the largest experience, consider mercury as their sheet-anchor in this disease. It should be administered in doses of sufficient quantity to affect speedily the mouth. Many practitioners who use this remedy do not employ it as an absolute cure, but only in those cases in which the inflammatory symptoms are severe. In addition to these means, purgatives, emetics, antimonials, and cold affusion have had their advocates. These remedies are however all of them adapted more to particular states of the system than to the disease itself, and should be administered according as circumstances arise which may indicate their necessity. With regard to the tonic or stimulant system altogether, it may be stated that this practice is now almost entirely condemned by British and American practitioners. In cases where the disease assumes a remittent form, quinine may be administered with advantage; but the administration of bark, so much in vogue amongst the Spanish medical men, is now very generally condemned. Dr. Stevens particularly insists on the administration of saline medicines in yellow fever, in which there is no objection, provided the stomach will retain them, and they probably have a beneficial effect on the system according to his theory.

The morbidity of this disease is extremely high. It is fatal in the great majority of cases, and in many instances the disease has been known to terminate in a few hours after the appearance of the first symptoms. The convalescent period is almost as severe as the active period of the disease. The cases of convalescence are by no means rare. But whilst there is much evidence to prove that this disease is not contagious, the theory of parasitism has not been able to explain away, or to account for, the phenomena that occur, but as leading to highly beneficial and important results in the treatment and prevention of this disease.
the centre of the breast-feathers and of those of the sides and lower tail-coverts a longitudinal brown spot; yellow of the abdomen pale.

Varieties.—Some parts of the body sprinkled with white in the yellow. The white, or yellowish-white. Wings and tail often pure white.

Geographical Distribution.—Denmark, Norway, Sweden, in short, throughout Europe to the Mediterranean, England, Wales, Scotland, and Ireland (resident), Orkney and Shetland (visitor).

Pennant quotes the Bruant of Belon (L'Histoire de la Nature des Oiseaux, p. 366) as this species, and the description seems to warrant the quotation. Belon considers the bird to be the Asbro (Anthus) of Aristotle (Hist. Anim., ix. 1); and remarks that the Greek of his time did not call it by the antient appellation in their tongue, but by the Latin name Florus, car ils ont esté dominers par les Latins, dont ils ont renou telle dictio. It is the Bruant of the French generally; Serramolle and Zivolo detta gialla of the Italians; and, according to the Portraits d'Oiseaux, Hortolano, Cia, Megliarina, Verzerot, Paterizzo, and Spatardia of the same people. It appears to be the Groning and Galespink of the Swedes; Goldammer, Ammering, and Goldammering of the Germans; Geel—Gerst of the Netherlands; Voit, Yellow Yoldrin, Yellow Yoclely, and Yellow Yelrod of the modern British; and Linos feyen of the antient British.

M. Temminck states that a species closely resembling this in the tints of its plumage inhabits Japan; but that it is specifically characterized by a shorter and rounded tail, and by a small black mark which encircles the bill of the male. For this species M. Temminck proposes the name of Emberiza perennis.

Habits. Food, etc. of Emberiza citrinella.—The food of the Yellowhammer consists of grain, seeds, and insects, and in winter it joins the flocks of greenfinches, chaffinches, and other congregators in the fields and farm-yards. In the summer the notes of the male, so familiar to every traveller, are repeated five or six times, and when the last drawn out, ring almost incessantly from the road-side hedge. Sometimes the form of enunciating this strain is slightly changed; thus, the cow-boys, according to Mr. Main, hear in the Yellowhammer's song the following words—

'A little bit of bread, but no cheese.'

The nest, which is ordinarily made on or very near the ground, sheltered by a bush, in the tangled grass of a hedge or ditch, is framed of moss, roots, and hairwell interwoven. The bird breeds late. The four or five pale purplish white eggs are streaked or veined and speckled with dark reddish-brown, and the male takes its turn upon them. The brood is generally out and about early in June.

These birds are caught and fattet for the table with the Oritalan in Italy, whence probably one of the Italian names above noticed.

In Scotland,' says the author of The Darker Super-

stitions' of that country, 'the yellowhammer has been con-idered mystical from three drops of the blood of Satan in its body, but further explanation is unknown.'

In the Portraits d'Oiseaux the following quaint's printed under the cut—

'Non sans raison Bruant je suis nommee ;
Vol et chant aussi semble le brun,
Le cheval vole en ma misfortune
Je suis nasse a la nue mexane.

The last lines allude to the supposed enmity between the bird and the horse, which Belon thus states in his old French:—'Il a haine avec le cheval : que le il dece de son pasture de l'herbe, de laquelle il se nourri sa. Il fait qu'il voix qui vide et son yeux qui tourne, se voyant contre le cheval il espouse, et le fer le.
Il n'a guere bonne veue : et par ce il est qualqu'ci du cheval, il se trouve au depouruene.'

YELLOW RIVER, called by the Chinese Hoang-ho, and the largest river in Asia, and the second in magnitude in the Chinese empire. It drains the seven provinces of China Proper, a small portion of Mongolia, and the greatest part of Tangut. The Hoang-ho rises in the high snow-covered mountains which fill up the greatest part of the southern districts of the last-named country [Tangut, vol. xxiv., p. 323], at a distance of 280 miles from its mouth in a straight line. But as there perhaps no river on the globe which changes so frequent the direction of its course, the exact course is computed by Ritter to exceed 2800 miles, amounting nearly to double the distance between source and mouth. The countries drained by the Hoang-ho cover an area of 74,000 square miles, equal to that of the British Isles. Of all the countries of Western Europe lying west of a line drawn from the most northern recess of the Adriatic to the bouchage of the river Oder in the Baltic.

The sources of the Hoang-ho have never been visited by any European, and are almost unknown. The map and section above the river, which has no communication with the sea. They therefore imagined that Tartary was, the water is lost in Lake Uron [Travels in Nanlu, vol. xxiv., p. 364], constituted the upper course of the Hoang-ho, and that it was connected with the two sources of this river by a subterranean channel. Were these true sources were situated was not known until Mr. Kuphol, a Mongol who travelled towards the end of the thirteenth century, sent some sons to discover and to explore the country surrounding them. According to the report made by these people, the sources of the Hoang-ho are found in a deep valley between the ranges of the Bayan Khara Mountains on the south and the Kuen-kuin range on the north. In the pressure more than 100 springs are stated to rise to a level plain about 40 miles in circumference. A great number of springs has resulted from a strong current seen from a distance the stars of the sky. Hence this tract is called the Mongol, Hotun Nor, or Star Lake, and by the Chinese Sing-su-hai, or 'the sea overspread with stars.' The same is brought up by these springs on a shorter distance, two lakes, called Ala-nor by the Mongols. The Ala-nor is therefore to be considered as the true source of the Hoang-ho.

Upper Course.—The Ala-nor lies in 35° 39' N. lat. and between 106° and 77° E. long. The river issuing from the lake on the east is called Tahi-ping-ho (the river with the red banks), and after having been joined by three tributaries it falls into the Alpine Lake Uling-hai, from which issues under the name of Hoang-ho. It then passes the immense ranges of the Kuen-kuin, runs for more than 300 miles southward, and resumes its eastern course and continues in that direct for about 100 miles. To avoid the high mountains of the Bayan Khara range, which stand in its way, the Hoang-ho turns with a bold sweep to the west, as if it were return to its sources, and flows in that direction about 100 miles, surrounding on three sides the eastern expanse of the Kuen-kuin Mountains. But the waters, masses of the same system oppose its course west, and it turns by degrees to the
Mongolia. [Mongolia, vol. xv., p. 232.] It is certainly remarkable that in a course of more than 500 miles from Mongolia to its mouth, the river Hoang-ho bends towards the south, not a single river above the size of a rivulet increases its volume of water, and this fact more than any other indicates the extraordinary nature of the country which extends along this part of its course.

Where the Hoang-ho flows through a plateau very imperfectly known, as it has been seen by the Jesuits only at a few places, where they were obliged to pass it. Below the mouth of the river Targhuenu (40° 30' N. lat.) its width amounts to about 800 feet, and further south, at Paoto-tsheou, it has increased to 1,400 feet, and so rapid, that the imperial court required three days to pass, though great preparations had been previously made for that purpose. It is observed that at this part the current can only be stemmed by vessels when they have a strong wind in their favour, and that it cannot be used as a regular means of water-communication. Farther down, at Lung-men (the throat of dragon), the bed of the river was originally narrowed by projecting high rocks, and also at some other places, but the rocks have been removed by art and the bed of the river thus widened. This proves that the lowest part of its middle course is used as a navigable channel. In these parts, but the place is not more exactly indicated, are cataracts or rapid, which by this time are compared to the Weihai.

Middle Course.—Below Lant-tsheou the Hoang-ho turns toward the sharp bend northward, and flows in that direction, with some deviation to the eastern, through five degrees of latitude. Its course is such which has already been de not short all about 430 miles. When the river has passed 41st lat. it meets the range of the In-shan Mountains, by which its course is turned to the east. After flowing near 1°N. lat. about 180 miles eastward, the mountains bordering on China Proper on the north oppose its progress in that direction, and it turns to the south and runs through the mountain-region a space of about 520 miles (seven degrees of latitude) until it enters the great plain of desert mountains, which is compared to the Weihai. Its middle course amounts to about 1130 miles.

Where the Hoang-ho issues from the narrow valleys which rapid current has scooped out in the snow-covered sky masses of Tungut, and at the place where it begins to descend, it indicate them which have already been de, the fortress Tse-yish-kuan is built. The valley high extends from this place to Lant-tsheou and hence north and east to the mouth of the Thian-shui (40° 30' N. lat.) is compared by Peter Martini, a native of the river, that runs about 250 miles by the name of Innerwuch, which shows that the river has left behind the more elevated parts of the mountain-region, but is still traversing the part of Che. In this part of its course, especially above ant-tseou, the volume of its waters is greatly increased by the south. Rocks and cliffs by the name of Kahan-yeou, originating in the Nan-shan, flows to it from the northwest, and appears to have a course of more than 800 miles.

At the mouth of the Shian-shui the mountains on the river disappear, and are replaced by a hilly plain, in which tracts of fertile and cultivated land are mixed with sandy hills. Proceeding farther north the extent of the fertile grounds decreases until, opposite the entrance to its affluents, the total extent of land placed by the Steppe of the Ordos, a desert whose surface is mostly covered with sand-hills, destitute of wood, near of vegetation, but in the numerous depressions between them are extensive meadows and pasture-grounds, enclosed by the extensive mountainous ranges, inhabited by a very bad crowd of animals. Few and limited tracts this country are cultivated, but the Tshoros Mongols within their numerous herds occupy nearly the whole of the plains surrounded by the northern bend of the river. On the west of the river, in the vicinity of the town of Ning-hia, it is a mountain-range called Holang Shan, which however does not rise to a great elevation, probably more than from 3000 to 4000 feet above the surface thereof, and is stated not to exceed 3 or 4 miles in isth. Its eastern declivity is an overgrown with forests. The tract of country between the Holang Shan and the is several miles in width, and well cultivated, its soil, richly sandy, being rendered fertile by numerous canals that are fed by the lower reach of the river. But this fertility increases in proceeding northward, and disappears entirely when the river passes 40° N. lat. In these parts Ritter sees the greatest elevation of the Gobi, or Great Desert, if the river at its most northern course runs in a valley, which is reached at the extent of that elevated country, but it does not appear that it has a bottom along its isth., nor that any tract contiguous to it is cultivated. The steppes of the Gobi being wrapped in uninterrupted rocky wastes, and we do not know how they are reached, are compelled to run eastward until it arrives at the numer-

ranges which traverse Northern China east of the mountain, and are offsets of the ant-tseou plains of

The great road leading from Peking to the southern provinces, especially to Su-cho-an and Yun-an, lies through the lower part of this valley; and from Pekou it heads
southward over the Pe-ling range by a mountain road, which, for the difficulties it presents, and the art and labour with which they have been overcome, does not appear to be inferior to the road over the Simplon in Switzerland. This road leads to Mian-kian, on the Han-kian, and thence over a less mountainous region to Tshung-tu-foo.

After the Hoang-ho has left the pass of Thung-kian, it enters the great plain of Northern China; but not immediately the river, for more than 150 miles its course lies through a hilly country, which extends eastward to the mouth of the Lu-ho. Along the river however is a low tract, which grows wider in proceeding eastward; and its soil, although formed of alluvium, is very fertile and well cultivated. The hills also, having generally not very steep declivities, have been subjected to cultivation by means of terraces. Having been joined by the Lu-ho, which river runs in the same direction as the Hoang-ho about 200 miles to the north, and river passes to the lowlands, in its place, according to historical records, the Hoang-ho in former times divided into two branches, of which the northern ran to the north-east and north, and fell into the Gulf of Petchelli. This arm seems to have been the principal branch of this river, and the town of Kai-fong-foo, the source of the river, occurs, which are so extensive that they can only be traversed in several days. In these swampland grounds originates a river, called Wei-ho, which runs northward, and whose waters in the lower part of its course are used to form the Great Canal. It is very probable that this is the antecedent channel of the northern branch of the Hoang-ho.

At present, the Hoang-ho runs in one channel eastward, and near the town of Kai-fong-foo it borders on a very low and flat country, which is exposed to occasional flooding, which in China are more feared than war, plague, and famine. As the adjacent country is very low, it was at an early period considered necessary to protect it against inundations by dikes, built of quarried granite, of great strength. These dikes extend about 100 miles along the southern banks of the river. This had the effect, which has also been experienced in the Po and the Rhine, of raising the bed of the river, so that even when the river is low, its surface is being very much navigated; but at some later period it became unfit for navigation, like the Pelusian arm of the Nile. We do not know when nor under what circumstances this happened. It is however certain that on the northern side of the river, between the main dikes and the town of Kai-fong-foo, inundations occur, which are so extensive that they can only be traversed in several days. In these swampland grounds originates a river, called Wei-ho, which runs northward, and whose waters in the lower part of its course are used to form the Great Canal. It is very probable that this is the antecedent channel of the northern branch of the Hoang-ho.

In the reign of the last-mentioned monarch a large canal was made for the purpose of avoiding the too great accumulation of water in the Hoang-ho. This canal, which is situated in the province of Honan, and extends in a south-eastern direction to an arm of Lake Huang-tseu-hu (hu signifies lake). This canal is nearly 100 miles long, and it is stated that it had the effect of lowering the general surface of the river by about 70 feet. Large tracts of land which formerly were always wet, and water have been laid dry and rendered fit for cultivation. About 70 miles above its mouth the Hoang-ho receives a great supply of water by the channel by which Lake Huang-tseu-hu discharges its watercourse. This lake receives not only the waters brought from the Hoang-ho by the New Canal, but also those of the river Hsui-ho. The numerous rivers which unite with the Hsui-ho drain the extensive country which extends between the Hoang-ho and the Gie lowlands, and most of them rise in the most eastern offset of the Pe-ling range, which is known by the name of Mu-lung, and divides the province Hsing from Hupe. The two largest branches are called Yalu and Hsi-lung, and when the first named, which is far from the banks of the Lu-ho, is considered as the principal, the whole course of the river extends to 700 miles. The country drained by this river is flat, but appears to be less fertile than other portions of the plain. A short distance below the place where the two branches empty into the Hoang-ho are the two entrances of the Great Canal, which are graded by quays, built of large square pieces of granite sand stone and are nearly a mile wide. The Chinese who navigate the canal consider the passage of the two branches as the most remarkable monuments of the age, which frequently carries the barges for hundreds of miles. We have no account at all respecting the course of the Hoang-ho between the canal and the bouchure in the Hoang-hai or Yellow Sea.
During the long war consequent on the French revolution, and whilst this country was threatened with invasion, there was embodied in almost every county a mounted force of volunteers, with the title of Yeomanry Cavalry. It was subject to the same regulations, when on service, as the militia, and consisted of volunteers, of whom a large proportion were gentlemen or wealthy farmers; they were maintained for the most part, to their own expense; but they receive pay when in actual service, and there was some small allowance made by the crown towards the regimental expenses, such as the permanent pay of non-commissioned officers. They were commanded by the lord lieutenants of the county, who granted commissions to the subaltern officers.

The first act for embodying corps of volunteers was passed in the spring of 1794 (34 Geo. III., c. 31). It enacts that all persons who may during the war then raising volunteers not be employed under officers, holding commissions for that purpose from the king or from the lieutenants of counties, shall be entitled to receive the pay and shall be subject to the same discipline by courts martial, as the volunteer officers, as troops of the line, if on being called upon to dismount, or in the appearance of invasion they shall march out of their own counties or assemble within it to repel such invasion; or if they shall march at the command of the king or of the lieutenants of counties, their presence shall be reported by the justices of the peace within the county or the adjacent counties. The Act exempts volunteer officers from the militia; it gives power to the governors to billet the non-commissioned officers and domestic staffs on tavern keepers, and grants to commissioned officers and officers of the regular troops the benefit of Chelsea Hospital if they are disabled when on actual service.

In the year 1798 another Act was passed (38 Geo. III., c. 51), to facilitate the training of volunteer corps of avowed yeomanry. The object of this Act, though not in the body, 'yeomany cavalry,' It authorizes the billeting of the privates when called out to be trained, and it exempts from taxation the horses used in the service. After the short peace in 1802, the provisions of the preceding Act were dropped (42 Geo. III., c. 68), and the existence of the volunteer corps of cavalry (called by this Act for the first time 'yeomany cavalry') was revived or continued, without reference, as in the previous statutes, to the men's service.

Of late years, although many of these yeomanry regiments still exist, they are rather maintained for the purpose of amusement and good fellowship, than for any practical service; the necessary awkwardness of the men and their horses, and the expense of the maintenance of the yeomanry regiments, are causes of the latter service. In 1819, when a vast meeting was held at Manchester, it was dispersed by the yeomanry of that district with great, and, it may be said, unheard of success. In 1836, 338 troops of yeomanry cavalry, including 1165 officers and 18,120 men, at a cost of about 100,000L, per year to the nation. In 1838 the number of troops was reduced to 251, and the privates to 15,594. Between the years 1836 and 1838, the yeomanry were largely maintained out of the yeomanry corps was 128,000L, the greatest cost being in the years 1820, 1821, and 1822, when the annual average exceeded 192,000L.

YEOVIL. [Somersetshire.]
YEOMAN.' [See above.]
YETTEN. [Shetland.]
YEW. [Taxus.]
YEZD. [Persia, xviii., 479.]
YOGA. [The Sanscritical, yog, 'to join.' means the complete abstraction from all worldly objects, by which the Hindu ascetics hope to attain final emancipation from further migrations, and union with the universal spirit (Paramatma).] It chiefly consists in a continual meditation on the sacred monosyllable Om (the mystic name of the deity), profound contemplation of the divine excellence, and various acts of self-denial. The horrible tortures which the yogis commit on themselves are well known, and it is needless to repeat them here. It may however be necessary to mention that the Yoga is often practised for the purpose of obtaining the eight magical properties of power, viz. shrinking into a minute form, which is invisible (Prapti), attaining the power of a gigantic body (Mahamahā); or assuming levity (Laghūmā), rising along a sunbeam to the solar orb; or possessing unlimited reach of organs (Prapti), as touching the moon through the tip of a feather, and entering the moon with ease (Gaṇapammā), or sitting upon the sun and setting into the earth as easily as in water; dominion over all beings (Parapūtaka); faculty of changing the course of nature (Varanāsvāmā); ability to accomplish everything desired (Prākāramā). Consequently a Yoga, which has attained to have acquired such facts, is to vulgar apprehension a sorcerer, and is so represented in many a drama and popular tale. In the Purāṇas and other works, Yoga very often means magic, or the art of deluding.

YOGA is also the name of a branch of the Śāṅkhu's school of philosophy, for an account of which see SANSKRIT LANGUAGE AND LITERATURE.

YONNE, a department of central France, bounded on the north-east by the department of Aube, on the east by the department of Côte d'Or, on the south by that of Nièvre, on the west by that of Nièvre and the Marne, and on the north-west by that of Seine et Marne. The department lies between 47° 20' and 48° 24' N. lat., and between 2° 55' and 4° 20' E. long. The form of the department is irregular; its greatest length is 131 miles, and its greatest breadth, 92 miles. It consists of a heterogeneous province, lying between the river of the Yonne, which was called the bank of the Yonne at Villenевre-la-Guïard, above Montereau-fault-Yonne, in the north-west, to the junction of the three departments of Yonne, Nièvre, and Côte d'Or; in the south-east, 62 miles; the greatest breadth at right angles to the border of Nièvre, 38 miles; the border of Aube near Neuvy to the junction of the three departments of Yonne, Nièvre, and Loiret, 53 miles. The area of the department is estimated at 2,621 square miles, being considerably larger than the average of the French departements.

The population in 1826 was 342,116; in 1831, 392,487; and in 1836, 355,237, showing an increase in the last five years of 2700, or about 0.8 per cent., and giving 326 inhabitants to a square mile. In amount of population it is considerably below the average of the departments, and in density of population still further below the average. Auxerre, the capital, is 88 miles in a direct line south-east from the barrier of Paris, or 100 miles by the road to Avallon. The department has no mountains; but it has in many parts an undulating surface; the highest ground is toward the south-western corner, where the low hills which separate this part of the department from the rest of the country. The country about Avallon is comprehended in the granite district of Morvan; the rest of the department south-east of a line drawn from Côte on the Loire, by Auxerre, toward Troyes, is occupied by the oolitic and other formations which intervene between the cretaceous and the new red-sandstone groups, and the part of the department which is north-west of such line is occupied by the cretaceous formations which surround the chalk-basin of the town of Tonnerre. Lime-flags and marls, and stone suitable for lithography are quarried; and gunflints, and red and yellow ochre, are procured. A mine of lead and silver was worked in the middle ages near Avallon: the working was resumed in the last century, but was soon abandoned. The department belongs almost entirely to the basin of the Seine. Some parts along the western border are drained by the Loing; and by the Ouanne, the Clery, the Bes, and the Lomnain, all of them small affluents of the Yonne; the central and eastern parts are drained by the Yonne; by the Cure, the Serein, the Armançon, the Tholon, the Yvin, and the Vannes, feeders of the Yonne; and by the Voisin (with its affluent the Cousin), and the Armançon, feeders respectively of the Cure and the Armançon.

The Loing and its feeder the Ouanne rise in the south-west part of the department, and have a north-western course into the adjacent department of Loiret, in which...

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their junction takes place. The other feeders of the Loing have only their sources and the upper part of their course in this department.

The Yonne rises in the department of Nièvre, near Château-Chinon; and flows north-north-west by Château-Chinon, Morceaux, Tanay, and Clamecy, into the department of Yonne. Its course is through this department, and the whole still north-north-west: it passes Coulanges, Châtel-le-Censoy, Mailly-le-Château, Cravant (just above which it receives the Cure on the right bank), Auxerre; Joigny (below the right bank); and at the latter town it receives the Souron and the Armançon, both on the right bank); and just below Joigny it receives the Tholon and Yrin, both on the left bank. St. Julien, Villeneuve-la-Regn, Sens (near which it receives the Vannes on the right bank, Pont-sur-Yonne, and Villemain). Below Villeneuve-la-Regn it enters the department and enters that of Seine et Marne, through which it flows a short distance west-north-west to Monte-
neuf-fault-Yonne, where it unites with the Seine. Its whole course may be estimated at about 150 miles, namely, about 80 in that of Yonne, and 6 in that of Seine et Marne. The river is employed for floating timber from near its source: at Clamecy the timber is formed into trains or rafts, and floated down to Auxerre. At Auxerre the navigation commences, and extends about 80 miles, most of which is in this department. Its course may be estimated at above 50 miles, about half of which is in this half. It is used for floating timber. The Voisan, which joins the Cure, and its feeder the Chantereine, enters the department of Côte d'Or, on the north-east; the length of the Voisan is about 30 miles, and of the Cousin about 14. The Serein rises in the department of Côte d'Or, and flows north-east into the department of Yonne, where its course is at first in the same direction. Afterwards it bends more towards the north, it passes Montréal, L'Isle, Noyers, Chablis, Ligny-le-Châtel, and Seignelay, and falls into the Yonne. Its whole course is more than 80 miles, about two-thirds of it in this department.

The Armançon rises in the department of Côte d'Or, and flows north-north-west by Sens into the department of Yonne, through which it flows north-west by Nuits, Ravières, Anc-le-Franc, Tanlay, Tonnerre, Épineuil, and Dammarçon; then westward by St. Florentin and Gcize to the Yonne. The whole course may be estimated at about 92 miles, about 36 in the department of Côte d'Or, and 56 in that of Yonne. The Armançon belongs chiefly to the department of Aube: its length is about 27 miles, one of 7 of which is in the department of Yonne. Both the Armançon and its feeders, including the Armaise, are used for floating timber; below the junction of the Armançon the timber is formed into rafts or trains. The Tholon is 17 miles long, the Yrin 17 miles, and the Yonne about 28: the last rises in the department of Aube, and flows westward, passing Villeneuve-l'Archevêque, Poisy, and Chilly; it is used, as well as the Vrin, for floating timber.

M. Millin (Voyage dans les Dép. du Midi de la France, etc.) has described the manner of sending timber down these streams:—"One is particularly pleased to see pass with the rapidity of a bird's flight those long and narrow rafts called "trains," which convey to Paris a considerable part of the wood necessary for the consumption of that city. At their outbreak the logs are formed into trains, and the persons employed distinguish by the mark those which belong to each proprietor. The logs, tied together with twigs, are placed on hollow vessels or floats ranged at intervals, and form "trains," each guided by three men, to Paris. These boats skillfully follow the windings of the banks, avoid the shoals, with which they are well acquainted, and exhibit their quicksight and all their skill in steering the bridges, through which they pass as quickly as possible: the head of the train is scarcely seen, when in an instant it is already far off. As soon as the train arrives at the wharfs at Paris, men plunge into the water to bring the logs up to the middle, pull it to pieces, and load it on the wharfs. However, a sudden rising of the waters of the Loing sometimes occasions terrible disasters; sometimes, as in a forgetful moment the frat construction is allowed to get out of its course, is stopped, and the whole stream which are picked up by a crowd of people, but without the proprietor being able to recover more than a very few parts."

There are two navigable canals in the department, one from the provinces through which they pass. The Canal de Bourgogne connects the river system of the Seine at Châtillon-sur-Marné to the Yonne at Joigny. The Armançon is taken up the valley of the Armançon chiefly on the north-east bank of that river, then up the valley of the Brenne, a feeder of the Armançon, and, crossing the Seine, which separate the basin of the Seine from that of the Yonne, to the valley of the Yonne. At Châtillon, near the Seine at St. Jean-de-Losne, the Yonne is joined by the Canal de Bourgogne. At this point all the vessels which pass by the Yonne officially stated at 91,832 mètres (about 57 miles) on the south side of the descent from the summit-level to the level of the basin is of 311 mètres (about 1020 feet) long, and was projected by J. IV., but was not commenced until 1776; and if finished which we have no certain information has been com-
pleted only within a very few years. The Canal de Bourgogne the descent to the commence the navigation on the Yonne at Auxerre, a considerable part of the canal above Auxerre being comprehended in it. The route of the canal which belongs to this department, includes all the incorporated part of the course of the Yonne officially stated at 33 miles. What progress has been made in the works of this canal we have no means of judging. The descent from the summit-level towards the Yonne is accomplished by 26 locks; that towards the Yonne by 7 locks.

The number of Routes Royales, or government roads January 1, 1859, was six, having an aggregate length of 329 miles, of which some 50 miles are in courses which is in bad repair, and 200 miles unfinished. The principal roads are those from Paris to Lyon by Auxerre, and both of which are of the first class. The road by Auxerre which is the principal, enters the department on the east side near Villeneuve-la-Regn, and follows the right of the Yonne, passing by Pont-sur-Yonne, where it receives the Yonne from the left bank to the right: then by Sens-la-Regn, Joigny, where it receives the Yonne from the left bank, Auxerre, where it crosses the town at the time, and by Vernois into the department of Côte d'Or. It formerly passed through Vallon, but a short cut has been made, by which this town is avoided. The road through Dijon branches off to the left from the road to Auxerre at Joigny, and follows the valley of the Yonne through the forest, made of the Aube, Damanville, Lour-nay, Tonnerre, Anc-le-Francois, and Nuits, into the department of Côte d'Or.

Roads lead from Auxerre west-north-west by Toucy to Fargeau to Bone, which runs through the department of Nièvre to Clamecy, Nevers, and Montils; north-north-east by St. Florentin and Nevers to Tonnerre to Chalons-sur-Marne. A road leads from Sen-sur-Yonne, east to Poissy and Villeneuve-l'Archevêque; from there the road is stopped, and the po-
In its means of communication this department was rated by Dupin, in 1827, to be on the whole considerably below the average of France; but its pre-emminence was rather in its means of water-communication than in its roads, in which, in proportion to its area, it was rather below the average.

The area of the department comprehends in round numbers about 1,900,000 acres; of which about five-eighths, r from 1,100,000 to 1,150,000 acres are under the plough, the produce in wheat is considerably below the average of France; maize is not grown at all, and buckwheat is grown very little; but in others of Le-Meuse, one rye, maize, r wheat and r mixed, and especially in barley, the department far exceeds the average. The cultivation of potatoes is less than the average of the departments.

The whole production in grain is greater than the consumption of the department, and above 1,000 quarters of oats and 700 quarters of broad-corn are exported to other departments.

The grass lands amount to nearly 80,000 acres, the common lands and open pastures to 45,000. The department is singularly rich in iron-works; trade is carried on in firewood, charcoal, and especially in the number of sheeps. In the number of horses it is also below the average, but not so far below as the number either of horned cattle or sheep.

The vineyards consist of 60,000 acres, and in the extent of these and in the quantity of wine produced the department very far exceeds the average; wine is in great plenty production of the department. The growth, 1 proportion to the number of inhabitants, was estimated in 1827; of which 3,000 acres were wine is known, and another 3,000 acres were wine is known. There are three wine-fairs in the year; one in Yonne, another in Nievre, and the third in Yonne.

A great quantity is sent to Paris and to the departments lower down the Seine. The wines are known by the general designation of 'vins de Bellev Bourgogne,' or 'Lower Burgundy wines.' Some of them are in high repute; the red wines of L'Isle, over, are exported, and Cognac, and Auxerre are of the first class; and those of Avize, Clairon, Boivin, Migrenne, Judas, Pied-de-Rat, L'Isle, Quétard, Epinay, Irancy, and Coulanges-la-Vineuse, of the second class. Of the white wines those of Coulanges are seven years old, and sold to the Egyptian government, which, in 1822, purchased 500,000 cases of these wines. They are produced annually in the department in value of £150,000.

In the department of Yonne, there is also a considerable trade in wines; and that in the trade in wines is the most important, and that in the trade in wool, for it is the department where the largest quantity of wool is produced. The trade in wool is carried on in the department in the manufacture of cloth, and in the manufacture of woollen goods, and in the manufacture of cloth, and in the manufacture of woolen goods, and in the manufacture of woollen goods, and in the manufacture of woollen goods.

The population of the department in 1826 was 1,575,183; and in 1831, 1,600,000. The principal towns are

Avallon, population 17,100; a town of considerable importance, situated on the right bank of the Yonne, and near the Cité; Charlet-le-Censoy on the Yonne; Thionville, population 8,500; a town of importance, situated on the left bank of the Yonne, and near the Cité.

The department is divided into five arrondissements as follows:

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<tr>
<th>Arrondissement</th>
<th>Area in</th>
<th>Population in</th>
<th>Canton Comprises</th>
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<tbody>
<tr>
<td>Nevers</td>
<td>767</td>
<td>111,890</td>
<td>119,106</td>
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<tr>
<td>Thourotte</td>
<td>1,997</td>
<td>46,980</td>
<td>46,149</td>
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<tr>
<td>Le Creusot</td>
<td>1,997</td>
<td>46,149</td>
<td>46,149</td>
</tr>
<tr>
<td>Chalon-sur-Saône</td>
<td>2,000</td>
<td>50,000</td>
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<tr>
<td>Beaune</td>
<td>2,000</td>
<td>50,000</td>
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The arrondissement of Auxerre are the following towns:

Avallon, population in 1826, 12,348; in 1831, 14,339 (of whom 10,098 were in the town itself); in 1836, 15,578, on the Yonne [Auxerre].

Craney, Cravant, St. Brix, Bois-le-Roi, and Bréville, population 17,100 for the commune, Mailly-le-Chétel and Coulanges-sur-Yonne, on the Yonne, served by a mail coach; Auxerre, population 17,100 for the town, or 28,800 for the whole commune, Chablis, population 3,000 for the town, or 5,000 for the whole commune.

Avallon, population 17,100 for the town, or 28,800 for the whole commune, St. Florentin, population 2,396 for the town, or 4,042 for the whole commune, on the Armanne; Coulanges-la-Vineuse, Charentenay, Toucy, Ouson, and St. Sauveur, in that part of the arrondissement which lies west of the Yonne. The latter is known for the wines produced in the neighbourhood. Cravant has some historical interest as the scene of a severe battle in 1657. During the attempt of the English under Henry V. and VI. to conquer France, the lordship of St. Brix or St. Brix belonged to Louvois, the well-known minister of Louis XIV.

The third crusade, Philippe Auguste, of France, and Richard Cœur-de-Lion, of England, united their forces at Vezelay, to the number of 100,000 warriors. It was occupied for some time by the Huguenots in the religious wars of the sixteenth century: Theodore Beza was born in the town.
The townspeople carry on trade in corn and wood: there are twelve yearly fairs for corn, and wool. There are mineral waters and mineral springs near the town. Châtelet-le-Censuy has some ironworks. Montréal had an ancient castle, which was for some time the residence of Queen Brunehaut, and, as it is said, of Francis or Francis I. The neighbourhood produces some fine wool. There are harvests in the year. Joux-la-Ville has four yearly fairs for corn, wine, cattle, and staves.

In the arrondissement of Joigny are the following towns:—Joigny, population in 1826, 5283; in 1831, 4760 for the whole commune; and in 1836, 5037 for the whole commune, 7544 on the Yonne; St. Julien and Villeneuve-le-Roy, population 3784 for the town, or 4966 for the whole commune, on the Yonne; Briçon, population 2464 for the town, or 2966 for the whole commune, near the Armançon; St. Mars, population 1370 for the town, or 2172 for the whole commune, and Bleneau, on the Loing; St. Benoist and Charny, on the Ouanne; Tonnerre, on a small affluent of the same river; and Dinxmont and Cerisiers, in the country on the right bank of the Yonne. Joigny was in the Latin of the middle ages called Jovinsacum; and its origin and name are said by some to be derived from JVovius, a commander of the Roman forces in Gaul in the reigns of Julian, Jovian, and Valentinian I. It had a strong castle in the town, and was the capital of a county. The town stands on the slope of a hill, rising from the right bank of the Yonne, over which there is a handsome stone bridge; along the bank of the river on each side of the bridge extends a broad and elevated quay, fronting which is a long and magnificent cavalry barrack. The streets are very steep, narrow, and winding, and are lined for the most part with wretched houses, among which are mingled a few old and very handsome constructions. In the upper part of the town is a fine château or castle, the windows and terraces of which command a beautiful prospect. Near it is the church, the fine vaulted roof of which, although mutilated, is worthy of notice. The town has two fairsbourgs or fairs, one is held at the foot of the bridge, on the opposite side of the Yonne. The town has some subordinate judicial and fiscal offices, two hospitals, a communal school, a large market-place, and a theatre. The townspeople trade in oak-bark, wood, charcoal, casks, hoops, wine, which is produced in the neighbourhood, good quality, brandy, and vinager; there are brandy-distilleries, tan-yards, and tile-yards; whitening is made. There are four yearly fairs for corn, cattle, charcoal, casks, and hoops. St. Julien, distinguished by St. Julien-le-Cap, on the left bank of the Yonne, has manufactures of polished steel articles and jewellery, and of coarse woolen cloth; there are some tan-yards and a bark or tan mill. There are four yearly fairs for kitchen and household utensils. The wine of the near parts of St. Julien is known, and it is held in good repute. Villeneuve-le-Roy, or Villeneuve-sur-Yonne, is on the right bank of the river, over which there is an old stone bridge. The principal street of the town is straight and handsome, with a gate and an avenue of trees at each end; the church is near the centre of the main street, and has an elegant front, with a handsome door on each side. Coarse woolen cloth and leather, and a confection of grapes, which is well esteemed at Paris, are made; and trade is carried on in wine, wood, and charcoal. There are four yearly fairs. Bréon, or Brinon, sometimes distinguished by the epithet 'l'Archevêque,' is a well laid out, well-built, handsome town. The townspeople manufacture woollen yarn, coarse woolen cloths, and leather, and carry on considerable trade in firewood, which is floated down the Armançon, and then by the Yonne and the Seine to Paris, charcoal, corn, and linen; there are six yearly fairs. At St. Fargeau and Bleneau trade in wood is carried on. St. Fargeau has seven yearly fairs. Bleneau was the scene of a battle in which Condé and the church of the minority of Louis XIV. Dixmont has two fairs in the year, for cattle, wool, and hemp.

In the arrondissement of Sens are the following towns:—Sens, population in 1826, 6065; in 1831, 5567 for the town; and in 1836, 6056; on the Yonne [Sens]; Pont-sur-Yonne, and Villeneuve-la-Gaizard, population 1794, on the Yonne; Chercy, on the Lure; Stery, La Chapelle-sur-Sereine, Sargines or Sargines, Vauxins, and Thirouville, in the country on the right bank of the Yonne; and Villeneuve-l'Archevêque, popula-

The town suffered severely in 1816 from a waterspout, which destroyed persons and did great damage to houses and property. There are three yearly fairs. There are public buildings in the year. There is a paper-mill at Villeneuve-la-Gaizard, and there are three yearly fairs. The town manufactures coarse woollen cloth, a tan-yard, and tan and tanning materials. Les Soyez is a suburb; it is a river stream whichweet the Vannes and is used for floating wood.

In the arrondissement of Tonnerre are the following towns:—Tonnerre, population in 1826, 3600; in 1831, 3773 for the whole commune; in 1836, 4293; Tanlal, Ancy-le-Francois, Neuvy-l'Arcb.eveque, the Pont-sur-Yonne, the Arme, and Noyers on the Serein. Tonnerre is on a slope of a hill, and is surrounded by woods. The hill, on which there is a stone bridge, and in a district which produces excellent wine. The Canal de Bourgogne passes near the town, which is well laid out and well built. It is a town of houses of stone. The pariah church is in a remarkable situation, and is surrounded by a wood. A town founded in the latter part of the thirteenth century by a princess of the ducal house of Bourgogne. The church of the hospital is remarkable for its size, and for the bold architecture of its vaulting, and the remarkable forms of its columns. The church was destroyed by fire, and is a communual college, a theatre, and a fine pape walk. There are a saw-mill, saw-mills, timber-yards, saw-mill shops, and corn-mills; paper-hangings and artistic implements are manufactured; and trade is carried on. There are three yearly fairs. There are some administrative and civil government offices, and a subordinate court of justice. Courses of instruction are given in geometry and mechanical sciences. In one of the suburbs is a spring of water copious that it forms several small streams close to a source. Tonnerre was nearly destroyed in the wars of France under Edward III., and in the civil wars of the Bourguignons and the Armagnacs. It was the scene of many engagements and battles. It was the residence of the Chevalier d'Eon de Beaumont, who, after distinguishing himself as a diplomatist and a soldier, was obliged, by an order of the French king, for some erroneous reason, to assume the garb of a female. Here are described the story of the famous tradesman. At some trades and in corn and wood, and there are six yearly fairs. Noyers is in a valley inclosed by hills covered with vinyards. It has an hospital. The townspeople manufacture woollen yarn, coarse woollen cloths, and leather, and carry on considerable trade in firewood, which is floated down the Armançon, and then by the Yonne and the Seine to Paris, charcoal, corn, and linen; there are six yearly fairs. At St. Fargeau and Bleneau trade in wood is carried on. At St. Fargeau has seven yearly fairs. Bleneau was the scene of a battle in which Condé and the church of the minority of Louis XIV. Dixmont has two fairs in the year, for cattle, wool, and hemp.

The population, when not otherwise described, is of the whole commune, and from the census of 1836.

The department forms the archiepiscopal see of Sens and Auxerre, and is the seat of the bishopric. The bishops are the bishops of Troyes, Nevers, and Moulins. The department is in the jurisdiction of the Cour Royale and the Université de Paris, and is included in the second military division, the head-quarters of which is at Joinville.
aspect of education it is above the average of France. Of a young men enrolled in the military census of 1828-6,
the number of the young men in the military service was the average of France being less than 39 in every 100.
In the earliest historical period the greater part of the depart-ment was included in the territories of the Senones and the Emomios, but the eastern part about Tomerre belonged to the Lingones or the Aisadisci and Aisiovesc, Strabo, the southern part about Avalon to the Aedui, or Hedu, (Edes or Adesom, Hede, Aedes, Ploenest), These were Celtic nations, and the Senones joined the Romans of Edward V. and his two sons, Henry V., and Henry VI., were descended only from John of Gaunt, duke of Lancaster, the fourth son of Edward III. The son of the earl of Cambridge and of Anne Mortimer was Richard Plantagenet, who became the third duke of York, in 1460, and the last of the line of Edward's eldest son, Edward, who ascended the throne as Edward IV. in March the following year. After the death of Edward V. and his brother, some time in 1483, the representation of Edward IV. rested in his eldest daughter, Princess Elizabeth, who married James IV. of Scotland, and was the mother of Henry VIII., and also, through her eldest daughter Margaret, who married James IV. of Scotland, the ancestor of James I., who, in virtue of that descent, succeeded to the throne of England, on the failure of the eldest son of Henry VIII., and his two sons, Henry, who was descended from Elizabeth, the eldest daughter of James I., the line of his son Charles (with the exception only of Mary and Anne, the two daughters of James II., neither of whom left any issue) having been expelled from the throne at the Revolution of 1688.

Since the time of Edward IV. the title of duke of York has been borne by Richard Plantagenet, the second son of that king; upon whom it was conferred in 1474, and who was raised by his elder brother, Edward V., to the dukedom of York, in 1483; by Henry Tudor, second son of Henry VI., who was created duke of York in 1491, and who became prince of Wales on the death of his eldest brother Arthur in 1503, and ascended the throne as Henry VIII. in 1503; by Charles Stuart, second son of James I., upon whom it was conferred in 1604, and who became duke of Cornwall on the death of his eldest brother Henry in 1612, was created prince of Wales in 1616, and ascended the throne as Charles I. in 1625; by James Stuart, second son of Charles I., upon whom it was conferred in 1651, and who was created duke of York and Albany in 1674, and died without issue in 1702, and by James Stuart, the eldest son of Henry, who was created duke of York and Albany in 1716, and died without issue in 1717; and by Frederick, next brother of George IV., who was created duke of York and Albany in 1784, and died without issue in 1827.

The capital of the most extensive county in England, and a place of distinction from the earliest period of authentic British history, is situated on the banks of the Severn, or Wye, which flows through the midst of it, and receiving in its course nearly all the waters of Yorkshire, forms, in conjunction with the Trent, the estuary of the Humber. According to the "Trigonometrical Survey," by Mudge, the latitude of the Minister, which stands in the north-west corner of the city, is 53 37' 39" N., and the longitude 1° 2' 31" W., or the 144th meridian.

York, being originally a town of the Huggerists, a people of Celtic origin, inhabiting the country extending northward from the Mersey and the Humber to the Firth of Solway and the Tyne, and descended from the British town of York, there is no doubt that it was a collection of huts surrounded by a trench and the trees which had been cut down for the building of the town. The site of the town was the seventh century. The most probable remains of a Roman station on the site of York, near the confluence of the Yarli and the River Nidda, is a Roman station on the site of York, near the confluence of the Yarli and the River Nidda, or near the confluence of the river Ems and the North Sea. It was a Roman station on the site of York, near the confluence of the Yarli and the River Nidda, or near the confluence of the river Ems and the North Sea.
subdued the whole country of the Brigantes; its original Celtic appellation being retained in the Latinized form of Eboracum. It appears to have very soon become the principal Roman station of the north, and even of the whole province of Britain. Whether it was a colony or a municipium has been a subject of dispute. In the one description it is called a colony; in the other, a municipium. The head-quarters of the sixth legion from the time of its arrival in Britain in the reign of Hadrian, till the departure of the Romans from the island. The present name, which came over with the emperor Constantine, had previously been stationed here, and, of course, continued here after its incorporation with the sixth. From the time of Septimius Severus, if not earlier, it was the residence of the emperors when they visited the province, and, in their absence, of the imperial legates. Here the emperors Septimius Severus and Constantius Chlorus died; and here, according to common belief, Constantine the Great was born. But this belief rests upon very insufficient evidence. For its pre-eminence among the Roman stations in Britain, Eboracum was indebted, in a great measure, to its situation by the banks of a navigable river, in the midst of a remarkably extensive and very fertile plain, in the heart of the large district which lay between that part of the province of which the Romans had absolute undisturbed possession, and which they never could subdue, with the fierce hordes of which they were compelled to wage unceasing and doubtful warfare. Similar circumstances contributed to maintain the distinction which York enjoyed during many centuries.

One of the angle towers and a portion of the wall of Eboracum attached to it, are to this day remaining in an extraordinary state of preservation. In a recent removal of a considerable part of the more modern wall and rampart, much larger portion of the Roman wall, connected with the same angle-tower, but in another direction, with remains of two wall-towers, and the foundations of one of the gates of the station, were found buried within the ramparts; and excavations at various times and in different parts of the present city have discovered many indubitable remains of the fortifications of Eboracum, on three of its sides, that the conclusion appears to be fully warranted that this important station was of a rectangular form, corresponding very nearly with the plan of a Polybarium, occupying a space of about one-third of a mile by about 550, inclosed by a wall and a rampart mound on the inner side of the wall, and a fosse without; with four angle towers, and a series of minor towers or turrets, and having seven gates or principal entrances, from each position, and meeting the neighbouring stations mentioned in the "Itinerary of Antonine. Indications of extensive suburbs, especially on the south-west and north-west exist in the numerous and interesting remains of fragments, such as tombs, coffins, urns, tiles, and villas which from time to time, and especially in late years, have been brought to light. Numberless tiles, bearing the impress of the sixth and ninth legions, fragments of Samian ware, inscriptions, and coins from the age of Julius Caesar to that of Constantine and his family, concur with the notices of ancient geographers and historians to identify the situation of modern York with that of ancient Eboracum.

The interval between the final departure of the Romans from Britain, and the arrival of the Saxons in the southern parts of the island, which had long been harrassed by their fleets, was very short; but more than a century appears to have elapsed before the foundation of any Saxon kingdom north of the Humber was laid. During this long period the Saxons had the whole of the northern half of the island to themselves. The inhabitants were no doubt chiefly descendents of the ancient Brigantes, who, retaining their ancient language, though their ancestors, as Tacitus tells us, had been taught to speak the Latin tongue, were the original stock of the city, with a very slight variation, and the addition of a British term indicating the increased dignity and strength of the place. For it is most probable that it was during this period, and not, as is generally supposed, prior to the invasion of the Romans, that the city received the appellation of Caer Ebrauch. Though it lost the pre-eminence it had so long maintained, as the different Anglo-Saxon kingdoms rose and flourished, yet it was unquestionably the chief city of the north; an important bulwark against the incursions of the Picts, from which there is reason to believe it suffered greatly, if not holpen, at the time discovered here; but it is not improbable that one of the remains generally regarded as Roman may belong to this period.

In the authentic and valuable record the "Saxon Chronicle," no mention of an Anglo-Saxon kingdom north of the Humber occurs till the year 577, when Ida, the head of a body of Angles, took possession of Beornic, one of the two great divisions of the country, and settled in the neighbourhood of the Tees. Thirteen years afterwards, the other division between the Tees and the Humber, called Deira, or Deir, was seized by Aella, another Anglian chief. These kingdoms were soon united, and generally considered as forming a kingdom under the name of Northumbria, of which York was certainly the capital. By Tewold Beda and other Anglo-Saxon writers the Roman name of the city is retained. On some Anglo-Danish coins it is corruptly called Braeth. In the "Saxon Chronicle" and in Anglo-Saxon records, it appears generally in the form of Ewic. During the Anglo-Saxon and Danish period, it is even to the end of the reign of Henry III, at which time the coin struck at York. The orthography varied, and in every form its relation to the original Latin was easily traced. It is known in one of its forms, Ewreic, to the present day.

The historical notices of York from the foundation of the kingdom of Northumbria to the Roman conquest is but scanty, but they are continued to be a place of considerable importance, as the principal royal residence. At York, Edwin was not only king of Northumbria, but the fifth he held his court. Here, under the lofty walls of a city which says Alcuin, had erected the first metropolitan church. Here many kings of Northumbria were consecrated and many were buried here; and some, abdicating, finished their lives in the peaceful retreat of the cloister. We have discovered many evidences to employ a considerable force in order to make master of this bulwark of the north. Athelstan, who united Northumbria to his dominions, deemed it prudent to demolish the castle of York. Edgar the fifth sole king of England, held his court here, and this city. Siward the Dane, who was earl of Northumberland in the reign of Edward the Confessor, built a church at York, dedicated to the royal Danish saint Olaf, preparatory to his intended foundation of a church at the time of the Conquest. Edgar the fifth held his council here a few months after his departure, and set out for the north. Very few Saxon or Danish relics have been discovered at York. An interesting portion of the Saxon church erected by Paulinus, or by Albert, has been recently brought to light beneath the choir of the present cathedral; and fragments of crosses, or commemorative plaques and some coffins, both of stone and wood, belonging to the Saxon period, have occasionally been found. The Danish relics have at various times been discovered, a large hoard of sceats, a coin peculiar to Northumbria amounting to more than 5000, has been lately discovered and probably struck at York, the only place in the Anglo-Saxon kingdom of Northumbria at which a mint could be established. The Danish章the possession of a large and beautifully carved iron horse Danish relic, presented to the church by Ulphus, a Danish chief and friend of Caute, when he colonized it with his people, but which was the original treasure of the church. Although William was crowned in London by Alun archbishop of York, the claims of the Conqueror were not yet long while strenuously resisted in the north, where William nobles espoused the cause of Edgar. Harold. As soon as affairs in the south were pacified, William took possession of York, built or repaired the castle in it, and strongly garrisoned it with Norman soldiers. Notwithstanding this, Edgar Atheling escaped to York, and was acknowledged king. The church,
ored by a powerful battery of guns and mortars, a considerable number of besiegers became wounded or killed by shell, and many of the garrison were killed or took refuge in the tower. The town was soon reduced to the state of a fortress, and the garrison was forced to surrender.

By the end of 1665, the town had fallen into ruins. The bridge over the river was destroyed, and the surrounding countryside was desolate. The town was abandoned and left to the ravages of time.

In 1668, the town was finally captured by the English and became a garrison town for the Commonwealth. It was garrisoned by a large force of soldiers, who built fortifications around the town to prevent it from being recaptured by the Royalists.

The town was eventually rebuilt and became a thriving center of commerce and industry. It was known for its woolen industry and its shipbuilding yards. It remained a garrison town until the end of the 18th century, when it was finally abandoned and left to the ravages of time.
gates were again defiled by a spectacle worthy only of an age of the grossest barbarism.

Among the interesting relics of Eboracum, or of York under the Romans, are remains or memorials of Roman temples; but although the Britons, as well as the Romans, had undoubtedly inhabited the site of Chester, so faithful was the departure of the latter, no trace of any sacred Christian edifice of Roman or of British times has been discovered. That churches had been built in many parts of the empire previous to the establishment of Christianity by Constantine is certain, and is by Eusebius; and there is no reason to suppose that a station so important as that of Eboracum would be destitute of them. Whatever edifices of this nature may have existed at York before or after the departure of the Romans, they were probably destroyed by the Saxons, when they founded the kingdoms of the Octarchy were universally pagans. Such they continued to be till about the end of the sixth century, when Ethelbert, the Saxon king of Kent, was converted to the Christian faith by the preaching of the saint Augustine, Edwin, the fifth Saxon king of Northumbria, and a native, it is said, of York, had married Ethelburga, the daughter of Ethelbert, and, through her influence and the zeal of Paulinus, a companion of Augustine, became a convert, and, as he became a heathen, a considerable number of the nobles of his kingdom, was baptized by Paulinus on Easter-day, in the year 627, at York, in the church of St. Peter, which, says Beda, he had hastily constructed while he was a heathen, and prepared to receive baptism. Soon afterwards, by the advice and with the aid of Paulinus, to whom he had given York as his episcopal see, the king made preparations for building a larger and a nobler church, in the midst of which the oratory, formerly consecrated and in which he had been baptized, might be included. He laid the foundation and began to raise the edifice; but before the walls were completed he was slain. The work was finished by his successor Oswald; but when he had also fallen, and Paulinus had returned to Rome (it is said that Paulinus had received the pallium from Rome, and been elevated to the rank of archbishop of York) he had been compelled to retire with Ethelburga to Kent, the church was wholly neglected, and burned.

From this sad state the celebrated bishop St. Wilfrid, in the beginning of the seventh century, restored it, adding greatly to its splendour by the assistance of artists whom he had brought with him from the Continent. About fifty years after this, in the year 741, the edifice was destroyed or greatly injured by fire. In the episcopate of the celebrated Albert, who was elected to the see of York in the year 707, a new church was begun, finished, and dedicated; from the description of which, by Alcuin, the learned pupil and friend of Albert, in his De Pontifici, Sacrae Ecclesiae we are warranted in concluding that it was one of the most magnificent of the Anglo-Saxon churches. A small but very interesting portion of this church, comprising a part of the earlier church built by Edwin, has been recently brought to light during the excavation of the present choir, after the calamitous fire in February, 1825. Attached to the church was an episcopal monastery, in the school of which Archbishop Egbert, the predecessor of Albert, taught, and which he enriched with a noble library collected by him with great labour and expense. This celebrated library is supposed to have perished in the conflagration that destroyed a great part of the city and the cathedral in the beginning of the reign of William the Conqueror.

Archbishop Thomas, who was appointed to the see by William, in the year 1070, finding the church 'thus spoiled, rebuilt it,' according to the testimony of his friend Hugo the Precentor, 'from the foundation, and adorned and enriched with gold and silver.' From remounting the crypt, discovered in the recent excavation and preserved beneath the floor of the present choir, a good idea may be formed of the grandeur and beauty by which the entire edifice must have been distinguished. It appears to have been greatly injured in part perhaps destroyed by fire in the year 1137; after which it is commonly believed to have been rebuilt by Archbishop Roger. But there is sufficient evidence to show that it did not then require repair, and that the repairs and alterations were confined to repairs, alterations, and additions. It cannot be ascertained what was the state of the fabric in the beginning of the thirteenth century, when Walter Greu was consecrated to the archbishopric; it is certain however that the present south transept was begun by him about the year 1220, and it was probably finished during his episcopate, about the year 1241. The rebuilding of the north transept is thought to have been begun by the same prelate, and not completed till several years after his death. There are no documents in existence relating to the building of the chapter-house, but it is conjectured with great probability that the magnificent structure of stone was completed by the end of the thirteenth century; the two peculiar features were built in the year 1284, but that the west front was not completed before the year 1340. The present nave was begun in the year 1291, in the episcopate of John de Ro- main, but not finished till the year 1360, in the episcopate of Thoma the sofas. The south transept was not completed before the year 1472. About that time the central or lantern tower was finished; and very shortly afterwards the upper storey of the north-west tower, the south-western tower having been finished probably two or three years earlier.

This magnificent cathedral is cruciform, measuring a length from base to base of buttresses east and west, 519 feet, and from base to base of the transepts 26 feet. The internal breadth east and west is 465 feet, the transepts 222 ft. 6 in. The broad aisles have side aisles, two transepts with side aisles, a choir on side aisles, a Lady-Chapel, a large central tower, two lower towers, and a chapter-house with its vestibule. Outside the nave is attached a transept, and a western tower is 93 feet, of the choir 101 feet, of the central tower externally about 198 feet, internally 182 ft. 6 in. The height of the western towers is about 201 feet to the top of the pinnacles, 178 ft. 3 in. to the top of the battlement. In the chapels and paternosters attached in the nave, the length of the pinnacles is 124 ft. 19 in. The arches being angular in 60 ft. 6 in., and the height of the central base from the floor 62 ft. 2 in. The roof is supported by no pillar.

It is a remarkable circumstance in the history of the magnificent edifice that two of the principal portions of it have within the space of twelve years been destroyed by fire: the middle aisle of the choir by the fanatic monastic Jonathan Martin, in the year 1829; and the south-western bell-tower with its fine peal of bells, in the middle of the same year; the remainder, through carelessness in 1840. In both occasions the grand central tower presented to flames from spreading to the transepts.

The palace of the archbishop was antiently on the south side of the cathedral. Archbishop Roger it is said, rebuilt it in the latter end of the twelfth century, and a small portion of his work is still remaining, as the base of the palace, of a later date. This elegant building has been long an unsightly ruin, was repaired in the time of the deans and chapter. Near it is the new deanery, the residence of the dean, which was on the south side of the Minster, having lately been taken down. A house for the residence of the canons residuary has also been erected on the north side of the Minster in the site of one of the ancient archiepiscopal palaces.

The monastic institution appears to have been introduced into Britain by Augustine at the end of the sixth century, when a monastery was established at Canterbury by the royal convert. About fifty years afterward several monasteries were founded in the kingdom of Northumbria; but no establishment of regular monks is known to have existed at York prior to the Norman conquest. Since before the reign of King Stephen, on the 1st of July, in the island, laid the foundation of a monastery near the walls of York; but the building did not advance beyond the erection of the church; and the foundation was laid anew, and a great part of the monastery completed, by William the Conqueror, according to that which H. of Grace, the Blessed Virgin Mary. About the end of the thirteenth century the church and a great part of the monastery were rebuilt; but several portions of the ancient structure still remain. During the government of the third abbot Gruff, Archbishop Egbert, desirous of adopting the Cistercian rule, secured and founded the abbey of Fountains near Ripon. William Thornton, the last abbot, surrendered to the king in 1540, the work of the nave was finished, including the abbot, prior, and sub-prior, and one sub-priest. The clear value was reckoned to be 1060L. out of the
Till the passing of this act the jurisdiction of the corporation was not restricted within the proper bounds of the city, but extended to the Ainsty, which was originally a hundred or wapentake of the West Riding, bounded by the river Ouse, the Wharfe, and the Nidd, and a line from the town of Thorp-Arche on the Wharfe to Cattal Bridge on the Nidd. The city of York appears to have held claim to this extensive jurisdiction in the reign of Edward I., as having been granted by a charter of King John; but their claim was disputed: it was finally confirmed by a charter of Henry VI. By the late act the Ainsty is separated from the jurisdiction of York, and annexed partly to the West Riding and partly to the Pocklington union.

It is impossible to form any conjecture as to the extent of the population of York during the early periods of its existence. It appears from Domesday-Book that in the reign of Edward I., if the city be divided into seven wards, one of these belonged to the archbishop, and one was destroyed for the castles. In the remaining five wards there were 1418 houses, and in the ward of the archbishop 200. Supposing, with Drake, that in the ward devoted for the castles that many houses as to make the whole number 2000, and allowing five inhabitants to each house, the population at the Conquest would amount to 10,000. Drake supposes further that the suburbs contained an equal number of persons, and thus the whole number of York in the 12th century being at 20,000, as corrected, he thinks that when the survey was made between the sixteenth and twenty-first years of the Conqueror's reign, a great devastation of the houses had taken place, and the population must have been proportionately diminished. If the number of inhabitants be again corrected to 10,000, and the number of church buildings reckoned, he supposes that the population had greatly increased again in the time of Stephen, when thirty-nine of the churches are said to have been destroyed by fire; and it must have been considerable in the reign of Richard II., when the tenth of the church buildings were destroyed. In the sixteenth century, supposing the number of the population to be 11,000 inhabitants were destroyed in 1390 by pestilence. In the various vicissitudes experienced by the city, the number of its inhabitants must have varied. In the time of Edward II., when the metropolis of the northern counties, the population amounted to no more than 16,000. Since that time it has been nearly doubled; the census in 1841 giving 28,883, of which number there were 13,423 males and 15,450 females. But in this census one parish and part of another without the walls, forming in reality a part of York, though belonging to the North Riding, are excluded. Including these, the return is 29,500.

York from its foundation has never ceased to have the appurtenances of a free borough, and as the city was the residence of the archbishops of York and the seat of the diocese, it have been a centre of learning and one place of residence, and since the love and admiration of the clergy has been extended to all the inhabitants of the city, they have been of the most cosmopolitan character. The city, as it was, and as it is now, is a very fine city, and a very fine place for a day's pleasure; and in the area of the Roman walls there is a walk of about 500 yards, which till recently must have been a complete morass. The extent of the walls is about two miles and a half; a very considerable portion of them is accessible to the public, which, having lately been put into a state of complete repair, from the completion of the new entrance and gates, which were, perhaps, the most important of the gates, and the most imposing wall. There are four principal gates, or bars, as they are usually called, and five postern gates. Two new entrances through the ramparts have been recently formed; one of them exclusively for the railway, the other for road traffic, which has not to have been erected within the walls; another entrance, which had been closed since the time of Henry VII., has been re-opened. The castle has long since been converted into the county prison and the courts of justice
for the county; but some portions of the old work, besides
the noble keep, are still remaining. The felons' galley is an
entire new building, consisting of four radiating double
wells, with eight airing courts, the governor's house being
in the centre. The keep, known by the name of Clifford's
Tower, the Cliffsords having been the antient wardens of
the castle, is generally supposed to have been built by the
Conqueror, but the architecture indicates a somewhat later
period.

That York was not a strong military station only, but
also a place of trade even in the times of the Romans,
is by no means improbable; its situation being as conve-
venient for commerce as for war. Aelcin, in the eighth
century, says that York was a common market of land and
sea; and says that it was then visited by vessels from the most
distant lands. In the tenth century several merchant
vessels on their voyage to London from York were cap-
tured, and it is supposed that it was the route for the export
trade for the whole kingdom was fixed at Calais, the merchants of York had a considerable share in this
trade; some of them being mayors of the staple of
Calais, and one of them is named as having been the tree-
sureman of the staple of Calais; and they had a long
manufacture of woolen goods. In the days of Henry II.
and Henry III., the weavers of York paid a considerable 'firm' for their
privileges; and the manufacture was flourishing in the reign
of Henry VIII.

But this branch of trade has long
ceased to flourish here, York having not now the
breadth of any extensive manufacture. It has however been long
celebrated for the making of leathern gloves, shoes, combs,
and other articles of horn. During a long period these were
the staple trade of the city, but they are so no longer; yet York, in proportion to its population,
is the seat of respectable and steadily increasing trade, di-
vided into various branches. It has one extensive flax-nail;
many bands are employed in the manufacture of linens;
and York is said to have been as a high character in due
time, the guild of merchants at York all the privileges
which they and their houses had before enjoyed. By a statute
of Edward III. it is directed that the staple of wool, leather,
woolens, and lead, should be at York and nine other places
named in the act. In the reign of the fourth successor, the
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privileges; and the manufacture was flourishing in the reign
of Henry VIII.
YORKSHIRE, a maritime county in the northern part of England, and by far the largest of the English counties, is bounded on the north-east and east by the North Sea; on the south by the estuary of the Humber, and the counties of Lincoln, Nottingham, and Derby; on the south-west by a small part of Cheshire; on the west by Lancashire; on the north-west by Westmoreland; and on the north by Durham and the mouth of the river Tees. Its form is irregular, the greatest length of the county in a straight line is from the projecting point called Spurn Head, on the south-east, to the juncture of the counties of Westmoreland and Durham, on the north-west, a distance of about 124 miles. In the opposite direction, from the estuary of the Humber and Cheshire to the same point on the western boundary, which approaches within 10 miles of the west coast of Lancashire, the length of the county is about 100 miles; and its extent from the extreme south point, at the juncture of the counties of Derby and Nottingham, to Tod Point, at the mouth of the Tees, in a direction nearly due north, is about 92 miles. The county is comprehended between 53° 18' and 54° 40' N. lat., and between about 9° E. and 2° 36' W. long., from the meridian of Greenwich.

Yorkshire is divided into three Ridings, which are called, from their respective positions, the North, West, and East Ridings, and from the year 1295, by virtue of the Nebraska War, and the doctrine of the Popes, are divided into nine wapentakes, called Hundreds, and in the Population Returns and many other statistical documents these divisions are treated as distinct counties. The parishes of Crake, near Easingwold, though geographically forming part of the North Riding of Yorkshire, are therefore omitted in the following statement of the areas and population of the great divisions of Yorkshire. The population is here given from the Census of 1831, for the sake of comparison with other counties, those in the preceding section having been corrected as necessary; and in the Return of that year. The population in 1841 is given in a subsequent page, under the head of Statistics. The areas given in the Population Returns for 1831, from which the following figures are taken, somewhat exceed the aggregate of the areas given in the returns of 1841, as an attempt is made in the Returns to reconcile the apparent discrepancy:

<table>
<thead>
<tr>
<th>Area in square miles</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Riding</td>
<td>2,055</td>
</tr>
<tr>
<td>West Riding</td>
<td>2,576</td>
</tr>
<tr>
<td>East Riding</td>
<td>1,119</td>
</tr>
<tr>
<td>City and Ainsty</td>
<td>98</td>
</tr>
</tbody>
</table>

Whole county 3,830 3,735,040 1,371,550

The gross area of the county is more than one-tenth that of England and Wales, and more than one-ninth that of Great Britain. Its population, however, exceeds that of any other English county, excepting Lincolnshire and Devonshire, while that of the North Riding is nearly equal to Norfolk, the fourth of the English counties in superficial extent. The area of the whole county of York is greater than that of any of the counties of London, Devonshire, and Hertfordshire, and it considerably exceeds the aggregate areas of the ten smallest English counties. According to the returns of 1831 the population of Yorkshire averaged nearly 22,000 persons to a square mile, which is rather below the average for the whole of England, and above that of the three counties which approach nearest to it in superficial extent. York, the capital city, is in about 53° 56' N. lat. and 1° 3' W. long. It is not much more than 170 miles by the white sea from London to the coast line, but about 190 miles by the main road from London to Edinburgh, and about 202 miles from the latter city.

York is situated on the banks of the river Ouse, which flows from the White Cliffs, and 12 miles above the city, the river is crossed by a bridge 526 yards long. The town of York stands on the south bank of the river, and that of Beverley on the north, which are both distant about 11 miles. The south bank of the river, the most northern portion of the coast-line of the county. This estuary terminates at Tod Point, about 54° 37' N. lat., and from that point to Whitby, a distance of about 24 miles.

Borders and Coast-line.—The coast of Yorkshire is generally high, and consists in many places of precipitous cliffs. The south-eastern side of the estuary of the river Ouse, north of the town of York, is the most northern portion of the coast-line of the county. This estuary terminates at Tod Point, about 54° 37' N. lat., and from that point to Whitby, a distance of about 24 miles.
measured in a straight line, the coast, which consists of cliffs abounding in fossils, runs in a very irregular line towards the south-east, without presenting any place of importance. One of the cliffs, about seven miles north-west of Whitby, is marked by Greenough as having once taken fire, and is now separated by a gap of two years. At Whitby, which is situated at the mouth of the river Esk, is a harbour which, though exposed to gales from the east, has been so much improved as to be capable of carrying on a considerable trade. A few miles south-east of Whitby, the coast turns rather more to the west, and is separated slightly by the dangerous bay called Robin Hood’s Bay, towards the southern extremity of which, not far from the coast, is a hill popularly called Robin Hood’s Butts. From this point the coast proceeds south-south-east to Scarborough, where an elevated position which projects abruptly towards the east, with an arm towards the south, forms a semicircular harbour, which is much used for shelter from the easterly gales that are common along the Yorkshire coast, and which forms the only port of any consequence between Whitby and the mouth of the Humber.

The distance between Scarborough and Whitby, in a straight line, is about 17 miles; and from Scarborough south, the coast-line again inclines more to the west, to the western point which is variously called Filey Point, Filey Head, and Filey Bridge, near the boundary-line between the North and East Ridings. Immediately south of Filey Point is Filey Bay, from which the coast runs in a nearly straight line by Speeton Cliff to Flamborough, which, forming a promontory, is next to the north, a series of chalk cliffs, of brilliant whiteness, about six miles long, and rising in many places to an elevation of 300 feet. At the base of these cliffs are some extensive caverns, and near the extremity of the promontory, on a site about 250 feet above the level of the sea, is a light-tower erected by the Trinity House corporation in 1806, and which has a revolving light of sufficient intensity to be seen from a distance of 30 miles at sea. In thirty-six years preceding the erection of this important lighthouse, there were 124 wrecks in this portion of the coast, though its establishment has almost put an end to such casualties. The eligibility of the spot for the establishment of a beacon would seem to have been observed long before a regular lighthouse was placed there, as the name of the village of Flamborough is supposed to be derived from the practice of placing a light or flame at that point in early times. From Flamborough Head, which is 18 or 19 miles in a direct line from Scarborough, and about 50 miles from the mouth of the Esk, measured in this manner, the coast turns westward, and then sweeping round to the south, forms the capacious bay called Bridlington Bay, upon the coast of which the sea has made such encroachments as to gradually sweep away the villages of Auburn, Harbourn, and Newby, while the addition of the whole coast has been defended by two batteries, at Bridlington Quay, which is about a mile south-east of the town of Bridlington. From Bridlington Quay to the sharp-pointed promontory which terminates the Head, the coast is defended by two batteries, and for 17 miles, by shortliffe bent. Beyond these is a small promontory formed by two bays, from the north-east, and which is a good shelter for vessels. In this northern boundary of the estuary of the Humber, the coast-line is broken by many inlets or points of land. Greenough marks the sites of two churches, those of Owthorpe and Kilnsey, in the south-eastern part of this portion of coast, the ruins of which are partially washed away by the sea. At Spurn Head, which is about 40 miles south by east from Flamborough Head, and which consists of a long low promontory turning towards the south-west, part of the estuary of the Humber, and termed the Humberside, made considerable encroachments upon it; but of late it has receded so much as to leave extensive tracts of marsh land. One of these, a few miles westward of the Spurn Head, began to appear as an island about the commencement of the reign of Charles I., and, increasing from year to year, it was at length embanked and converted into pasture. In the Population Returns of 1841 this tract of land, though now only separated by a ditch from the mainland, retains the name of Sunk Island, is stated to contain 550 acres and 2240 inhabitants. The northern part of the coast-line of Yorkshire is rocky, and from the mouth of the Tees to Scarborough the cliffs, which are always washed by the sea at high-water, and in some parts at low-water also, are generally from 70 to 130 feet high, and often rise abruptly and overhang the beach. In many places they are still higher, and at Stoupe Bro, or as it is more commonly called. Snow Bridge, south of Robin Hood’s Bay, and about seven miles south of Whitby, they rise to the height of 600 feet above the sea. In the vicinity of the elevated promontory of Flamborough Head there are also cliffs of the height of 100 feet, and in places separated by upland of the same height. From Spurn Head westward to the confluence of the Ouse and the Trent, a distance in a right line of about 35 miles, the southern boundary of the county is formed by the Humber; and although the line is very irregular, in general it is in the vicinity of the coast, and is occasionally marked by some unimportant stream, such as the general direction to the north-west, and passes a little south of Shepley Head, and across the elevated and mountainous district called the Peak of Derbyshire. [Dunmore]

The next point of the boundary is the mouth of the Esk, where it joins the river Tees, at a point about 50 miles west by north of the Tod Point, the northern extremity of the Yorkshire county. The Tees, flowing by Barnard Castle, Yarm, and Stockton, forms the northern boundary of the county by this river, a mile west of the Esk. The boundary of the North Riding is coincident with that of the county on the north-east, north, and part of the west; but leaving the latter at a point about 22 miles south of the junction of Westmoreland and Cumberland, runs 18 miles to Barrow-in-Furness, thence forming an irregular course east by south to the river Duddon, or Y°, until 3 miles below Milnthorpe, and then follows the course of that stream to Ripon, where it turns off across the north shore of the Tees, and rejoins the river above Boroughbridge and Aldborough, and follows its course as far as York. Then and for some miles higher up, the river is called the Ouse. It then turns east, and afterwards north-east, to the Bever, which it joins at Stamford Bridge, and thence the course of that river by New Malton, to one of its sources near the coast, reaches the sea at a point near Filey Head, which separates the county from the East Riding.

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Description of the Surface, &c.—The most striking feature in the formation of the surface of this county is the great valley drained by the Ouse and its tributaries, which stretches from near the Tees, in the northern part of the county, to the estuary of the Humber in the south, having a general direction from north to south-east, and forming the northern slope of the most extensive valley in England, that of the Ouse and Trent. The high land on the eastern boundary of this valley, extending from the source of the rivers through their lower division of the Wolds, and terminated, a bold coast-line, from which, in the northern part of the county, the surface rises, in some parts very suddenly, to a great elevation. In the description of this valley and its boundaries, in the "Physical and Political Geography of England," I have already alluded to the Wolds, and observed that south of the estuary of the Tees we find the commencement of the high lands, which, in some places stretch inwards to a distance of from 20 to 30 miles from the coast. The Wolds, which have an area of about 744, in the trigonometrical station of Beverley Moor, and a little farther south, in the Guisborough Hills. These high lands run down to the sea-coast at Huntcliff, and also by the Easington Hills, about midway between the Tees and the Wolds, which in a straight line to the coast, a distance of about 30 miles from the coast. The whole tract of the Wolds, from the coast to Driffield and Beverley, 15 miles west, and 15 miles north from south, is a wild and mountainous district, intersected by numerous picturesque and fertile valleys, and forming an escarpment towards the west, which rises round towards the south and east from 100 to 300 feet, at Driffield, and Beverley. It forms a line tolerably parallel, in its general direction, with that of the coast, North of Driffield, where the rugged extremity of the highlands turns eastward, it overtops the coast, with rising to the height in many places of upwards of 1000 feet, the general aspect of this district, which is sometimes called the North York Moors, is bleak and dreary, especially as it is almost entirely destitute of trees. On the south side of the valley, the land descends to the sea, and the dreary wastes present themselves, with no boundary to the horizon; but towards the northern and western escarpments of the moorlands there are some very beautiful prospects. The steepest side of the elevations is generally on the north and east, lying eastward of the coast, which is the eastern boundary of the Ouse valley, and embracing the Eastern Moors and the valley of the Derwent.

The valley of the Derwent, which descends from near the sea-coast, in the neighbourhood of Scarborough, and, delaying towards the south-west, at Finningham, which is the southernmost promontory of the eastern coast, and the eastern boundary of the valley of the Ouse, separates the Eastern Moorlands from the Yorkshire Wolds, which form the continuation of the high lands on the east side of the valley of the Ouse. One portion of this range extends from the neighbourhood of Tantallon, on the Derwent, near the mouth of the Humber, west of Hull, following a course very nearly parallel with the coast-line, and terminating to the south in an escarpment which seems to push the river a little out of its direct course, and which commands most beautiful and diversified views, embracing the great estuary of the Humber and the opposite shores of Lincolnshire, as well as the low lands of Yorkshire on each side of the range. Upon this portion of the Wolds are the elevated points of Walton Beacon, about twelve miles east by north from York, with an elevation of 800 feet, and Humsey Beacon, farther south, with an elevation of 531 feet. The highest point of the Wolds extends in an easterly direction to Flamborough Head, forming the southern side of the Derwent valley. The ascent of the Wolds, excepting on their eastern side, is generally steep, but they seldom rise to an elevation exceeding 400 feet, and then it is usually in the form of deep winding valleys. Although their southern extremity presents the finest prospects, there are many points on the range from which beautiful views may be obtained of the vale of York, the low grounds, behind a short range of Spurn Head, and the valley of the Derwent, beyond which the Eastern Moorlands rise in the background. Flamborough Head, which forms the most prominent point on the coast, is not the most elevated of the cliffs which muzzle the eastern extremity of the Wolds; the highest point is at Bempton Cliff, a few miles farther north, which rises to an elevation of 436 feet. Speeton Cliff, about midway between Flamborough Head and Filey Point, is the extreme northern limit of the great chalk formation which separates the district, consisting of the south-west coast, at Sidmouth in Devonshire. On the eastern side the chalk Wolds terminate in a line which, commencing near Bridlington, and running south-west for a short distance, curves round to the south, and, passing through a series of hills, which are known as the Heale and Hull. The portion of the county which lies between this range on the north and west, the ocean on the east, and the Humber on the south and west, forms the low district of Holderness, the highest point of which, close to the town of Hornsea, is the largest lake of the county, called Hornsea Mere, about a mile and three-quarters long, and three-quarters of a mile broad at the widest part. The western side of Holderness is distinguished by the marshy prospects of the Pans, which, extending nearly 10 miles from north to south, with an average breadth of about four miles. As noticed in a previous column, considerable portions of land have been reclaimed from the Humber, and a large district of reclaimed land has been obtained by cutting through the district by Beverley, and falls into the Humber at the place to which it has given its name, has been drained under an act of parliament obtained in 1762. This level, which is called the Holderness Drainage, extends about 11 miles from north to south, and comprises 1,211 acres, and before it was drained the land was of very little value, because much of it was under water for one half of the year. Thirty years later an act was passed for the Beverley and Barnston Drainage, which includes a similar district on the opposite side of the Hull, extending from the sea-coast at Barnston, a little south of Bridlington, very nearly to the town of Hull, a distance of about 24 miles. This drainage has two outlet, flowing east into the sea, and the remainder of the level, amounting to about 10,000 acres, into the river Hull. The Keyingham Drainage, which lies further south, in the promontory which terminates at Spurn Head, was formed under an act passed in 1762, but extended, so as to embrace about 5500 acres, by another Act obtained in 1802. In addition to the great extent of fertile land added to the county by these drains, the high prices of agricultural produce in this country has been the cause of an increased extension of cultivation on the Wolds, which, until about the close of the eighteenth century, were little better than a large rabbit-warren. The valley of the Derwent, and its tributary the Harford, or Hertford, has been so much increased in the Act of 1800, of the Hertford and Derwent Drainage, comprising more than 10,500 acres, of which 4500 belong to the East, and the remainder to the West.
Riding. Under the provisions of the same Act, Spalding Moor and Walling Fen, which lie to the west of the south-eastern extremity of the Wolds, between them and the Ouse and Derwent, were drained and flooded.

On the western side of the great valley of the Ouse lies the Western Moorlands of Yorkshire, the general elevation of which is much greater than that of the Eastern Moorlands. These form part of the irregular tract of high land called the Pennine Chain, which, with the Cumbrian Mountains, the Derbyshire and Staffordshire hills, forms the most mountainous district in England. The highest point of the Pennine Chain is at Cross Fell, a few miles north-west of the village of Cross Fell, where the Westmoreland and Durham, and approaches within three or four miles of Cumberland; and from a little south of this point, which has an elevation of 2901 feet, is a ridge nearly coincident with the county boundary, with a steep escarpment towards the eastern side of the valley of the Eden, the abrupt elevation of which forms a contrast to the long and gradually sloping arms sent off on the east side into Yorkshire and Durham. South of this point the Cumbrian Mountains join the western side of the great Pennine range, the high lands coarsely in its further progress towards the south, sometimes spread out into extensive moors, sometimes present rounded mountain-tops, and in other places consist of a confused heap of rocky mountains, interspersed with numerous narrow valleys, which are strewn with fragments of the meteoric matter that has fallen. This portion of the range, which occupies the north-western extremity of the West Riding, forms the western portion of the wild district of Cranen, and comprises, among other heights, Wharfedale, near the summit of Wharfedale, Netherdale, near the junction of the counties of York, Westmoreland, and Lancaster, with an elevation which, according to Greenough, gives as 2384 feet, according to the Ordnance Survey, or 2461 feet, according to W. Allen, Esq.; Ingleborough, which is farther south, is 2691 feet, according to the Ordnance Survey, or, according to Mr. Allen, as quoted by Greenough (who gives the elevation as that of Ingleborough Hill and Simon Fell), 2412 feet; Pen-y-neyant, or Penninag, rather more to the east, about 2270 feet, having a summit near that of the Great Whernside, on the boundary of the counties of Yorkshire and Westmoreland, and still more to the east, 2363 feet; Bow Fell, near Sedbergh, a few miles north of the first-mentioned Whernside, which would appear by Greenough’s statement, apparently from the Ordnance Survey, to be 2911 feet high; an elevation considerably greater than that of any other mountain in this part of the country; but we find no other authority for the statement, and the Ordnance Survey of that part is not yet published; and Cam Fell, near the two Whernsides, which, according to the same authority, is 2245 feet high; this little known peak, little to the south-east of Skipton, is Rommel’s or Rumble’s Moor, with an elevation of 1318 feet. The valleys of this district, the most extensive of which are Nidderdale or North Riding, and the valley of the Wharfe, in Airedale, are so well wooded, cultivated, and studded with villages, as to present a beautiful appearance from the adjacent heights; and the picturesque character of the district, the roads of which afford some of the finest scenery in the country, is heightened by numerous small lakes, one of the principal of which is Malham Water, or Malham Tarn, 6 or 7 miles east by north of the town of Settle, which is about a mile in diameter, and is situated upon the summit of Malham Moor. Another small lake belonging to this mountain region is called the Simmer or Summer Lake, near Askrigg, in Wensleydale, which, together with the valley of the Swale and several others of minor extent, breaks up that part of the Western Moorlands which belongs to the North Riding. Though the general direction of the great range of mountains which occupies the western side of the county, and which is sometimes styled the back-bone of England, is from north to south, it does not consist of a single break, but of a number of ranges which, though perfectly irregular in their disposition, mostly form small angles with the main direction of the mountain-range, thereby forming numerous long and narrow valleys, with a great number of small lakes from north to south. This lofty district forms a kind of natural boundary between York and Lancashire, and presents great difficulties in the way of communication, especially by canals or roads. These difficulties however have not deterred engineers from the construction of both, though they meet with the execution of some extraordinary and costly works. The general character of the surface is the being flat towards the river Ouse, and having an undulating surface towards the Western Moorlands on its opposite boundary.
Geology.—In this great county, which stretches from the eastern to nearly the western coast of England, a great proportion of the stratified rocks of the British series may be advantageously observed; the exhibitions of igneous and miscellaneous, in almost every interesting character; the rich and varied deposits, are extensive and remarkably so; the series of ancient organic life is extremely large.

The leading physical features of the county are very obviously dependent on its geological structure, and the modifications to which they are subject by the action of the sea and modern atmospheric agencies, are various and instructive.

If through the city of York a line be drawn to the north-north-west and south-south-east, it will pass along the banks of the Humber. In the north these banks are lifted very gradually above one hundred feet above the sea. Were the general level of the land altered by a depression quite within the limits of well known instances, this vale would be a sea-channel, bordered by the cliffs of an island on the east, and more slowly rising lands on the west. The district on the west rises to assume a mountainous character along nearly all the western border of Yorkshire; the eastern region is somewhat mountainous in its northern portion, and in the southern rises into a curved range of hills, 'the Wolds,' between the flat district of Holderness and the vale of Pickering.

The elevated western district is based on Palaeozoic rocks; the central vale and the larger part of the eastern region are chiefly composed of chalk and clay. In Holderness, and in other limited tracts are tertiary and diurnal deposits which may be referred to the Cainozoic period.

In the condensed descriptions which follow, the deposits are arranged in the order of their relative position in the earth.

Cainozoic Deposits.

Alluvial.

Silt Lands.—The great rivers of Yorkshire which converge in the Humber, flow in all their lower parts through vast breadths of fine sediments, left by the rivers and the inundations of the sea, and a great portion of this silt is still below the level of the spring-tides, and only 

dasured from floods by banks.

In the valley of the Aire, at Ferrybridge, hazel branches are petrified, and nuts with the kernels changed to calcareous stone, were found in considerable numbers. (Phil. Mag., 1829.)

Post or Turf Moors, at no higher level than the silt and just noted, occupy extensive areas (Thorne Waste and Hatfield Chase), and in some situations deposits of silt, as much as 20 or 30 feet thick. Trees in considerable abundance lie in these deposits, and have been stated to show traces of the axe and marks of fire.

De la Prune, in Phil. Trans.

In such peat, on Thorne Waste, skeletons of the fallow deer, and in one remarkable case the bones were found to have lost their carbynous phosphates and carbonates, and by the action of sulphuric acid to have been subsequently converted to leather by the action of tannin on the remaining gelatine. (Reports of the British Association, 1831.)

Shelly Marks.—Under the peaty tracts of Holderness, which are of remarkably small extent, lie marls often filled with lizardine shells; and amongst them really the remains of the Irish elk (Ceritnx giganteus) have been found.

Raised Beaches. The shelly gravels and sands of some tracts near Bridlington, in Holderness, may possibly deserve this name, but more certainly applicable to some shelly sand-beds on the coast between Flamborough and Agglestone, from which several marine shells of existing species have been extracted.

Diluvial Deposits. Accumulations of local gravel are common in the valleys of most parts of Yorkshire, but over great breadth of the district of Holderness, in some of the coquet and chalk hills, and in many of the valleys in these formations—over great part of the area of the central vale of York—In the elevated country between the Swale and the Tees, and in very few situations in the valley of the Calder, occur deposits of gravel of various sizes and qualities, which have been drifted from great distances, even from beyond the limits of the county, especially from the north or north-west. Of these gravel some are of a size to arrest attention, and of such a peculiar nature as to be easily referred to the original situation from which they were drifted. Such in particular at the "termine banks" of porphyritic granite, which lie near the surface in many situations in the northern and eastern parts of Yorkshire, on areas which converge to the north-west, and finally terminate in the porphyritic granite fans of Shap in Westmorland. From that area they were swept across ridges of hills, and great breadths and valleys, as far as Flamborough Head and Scarborough; but whether by force of water, when the land was at a lower level, or was rising out of the sea, or by icebergs floating on water, or by glaciers moving across the land, or by a combination of these, is still a problem for discussion. A great proportion of small drifted stones lies in a great body of clay which is not stratified, and incloses stones of all sizes, without any arrangement of size, gravity, or mineral quality. Bones of the elephant, hippopotamus, horse, ox, etc., occur in these gravelly and argillaceous deposits, but not frequently, except in valleys where the materials may have been displaced and subjected to fluviatile action.

(Yale of York; Middle... On the Wolds, etc.)

Ostlerous Deposits.—At Hessle cliff, flinty gravel, covered by a diurnal clay, contains elephant's and other remains: at Belbeds, near Market Weighton, marl which has some drifted sand below and other gravel above, and fossils agin, fish, eggs, and some bones of other animals, with 13 species of land and fresh-water shells of existing species. Few of the numerous caverns in Yorkshire, which occur in the great limestone districts of the North Riding, have been explored for bones. The Cave of Kirkdale is the only subject of some curious remarks by Dr. Brodie's description (Reliquia Diluvianae), which enumerates more than twenty vertebrated animals among the relics.

Tertiary.

On the sea-coast, immediately north of Bridgeford Quay, green and ferruginous sands enter into the composition of the drift, and, under favorable conditions, have been explored with success, and have yielded a considerable number of shells of tertiary date, perhaps of the age of the crag of Suffolk, in which some of the species certainly occur.

Mesozoic Strata.

Cretaceous System.

Chalk (500 feet thick).—It constitutes the Wold Hills. This is usually a harder rock than that of the South of England, and the nodular flints which it contains are scattered through a great part of its thickness. The lower parts assume in places a greyer and softer aspect. Fossils abound in the upper part, and the chalk is marked by echinodermata, but mollusca and conchifera are less plentiful than in the South of England. The lowest band of the chalk is red, as in Lincolnshire. The chalk is unconformable to all the strata below, resting on each of them in which it rests in different parts of the Wold edge, as far as the lower beds of the lias.

Skepton Clay (150 feet thick).—This blue argilaceous deposit lies under the chalk, but does not graduate into it. It appears on the coast at Skepton, and inland at Knaph and other points. The organic remains are numerous, different from those in the chalk, and also different from those in the strata below. They appear to have analogous to the golt of the South of England, and also to the Kimberidge clay; the former analogues perhaps predominating, which the shells occur abundantly in the North of France, which are supposed to be nearly equivalent to the lower greensand.

Orichic System.

Kimmeridge Clay.—This occurs along the south side of the vale of Pickering, and under the extreme south of Wolds near Cave. It is not clearly seen in contact with the Skepton clay above, into which it perhaps passes. It contains Ostrea dentata.

Upper Cretaceous. 500 feet thick.—This section, as seen on the hills above Wiss Bank, and near Brotton, contains a few fossils.

Cornish Cretaceus 60 feet thick.—This rock forms the uppermost stratum of the series of strata...
Oolitic grains are of various sizes, some beds being coarse pisolithic. A few bands of chert nodules occur in it, and crystallizations of calc-spar and quartz, and deposits of calcere, lie in the cavities left by the decomposition of organic remains. It is not generally durable in buildings. In this rock is situated Kirkdale Cave. Several rivers sink into it, and reappear after long subterranean passages. These cavities are extremely numerous; the coral beds being local, but characteristic.

Lower Calcareous Grit (80 feet thick).—It forms the edges of the tabular hills above mentioned, and occasionally broad and very poor heath surfaces. Though calcere and ferruginous, it has little carbonate of lime in its composition, and some of the shells which it contains are silicified. Locally it is a good building-stone. The fossils are very numerous, and almost exactly like those of the same rocks in Oxfordshire. Ammonites vertebralis is common.

Oxford Clay, or grey earth of Scarborough Castle Hill (150 feet thick).—It appears in the steep slope of the escarpments of the tabular hills, under the 'Nab Ends,' and on the breast of the sea-cliffs south of Scarborough. The fossils which it contains are not in such abundance as those of the Oxford clay of the South of England.

Kelloways Rock, or Hackness Rock (90 feet thick).—It lies at the base of the tabular hills, and is the rock at the foot of the sea-cliffs south of Scarborough. It is more ferruginous than the calcereous grit; is in places somewhat oolitic; and everywhere rich in fossils, such as Ammonites calloviensis, A. subulavis, Gryphaea dilatata, and other shells characteristic of the same rock in Yorkshire, where it is a quarter of a mile thick. The Hackness rock has proved a fair building-stone in the museums at York and Scarborough.

Cornbrash (10 feet thick).—This impure calcereous rock is developed from the sandy Kelloways stone by a thin band of clay containing crustaceas. It is very rich in fossils, and is nearly continuous from Scarborough to the vicinity of Mallaun.

Below the cornbrash, the oolitic series of Yorkshire is very thin, unlike that of the South of England. In this is little sandstone, in this little limestone; the clays of the South are shales in the North; and with the shales and sandstones are fossil plants, coal-beds, and ironstone layers, very much like those of the older coal-fields. To these strata it is not desirable to apply always the same names as those which belong to (perhaps) contemporaneous beds in the South, but we shall indicate the probable analogies.

Upper Sandstone, Shale, and Coal (nearly the equivalent of the Hinton sands and Forest marble of Somersetshire) (200 feet thick).—This series of sandstones (conglomeratic, or fine-grained, or laminated), shales, coal, and ironstone courses, may be studied about Scarborough, and in the Vale of Pickering, in the direction of the northward. The coal is thin and of small value.

Grey Limestone (equivalent of part of the oolite of Lincolnshire), 30 feet thick.—It occurs at the White Nab, south of Scarborough, at Cloughton, and on the other points north of Scarborough and west of Whitby, always in an impure, rarely at all oolitic state. But as we turn south along the foot of the Hambleton Hills, it becomes oolitic, and, as the upper and lower sandstones diminish, it thickens and acquires more of the usual oolitic aspect. It is generally a very ferruginous rock, and the organic remains are not numerous. They agree partly with those of the cornbrash, and partly with those of a lower zone, to be mentioned below.

Lower Sandstone, Shale, and Coal, 500 feet thick. Thesed, of this great mass of arenaceous and angulaceous deposits is thick enough to be worked on the moors west of Whitby and north of Helmsley, and on the sea-coast at Hainton Wyle. Over it is a bed of sandstone, in which showe of equisites stand erect, and below is a bed of coal. This series of rocks ascends to the highest parts of the Cleveland Hills, 1800 to near 1900 feet above the sea.

Ferruginous Beds (inferior oolite and sand of Somersetshire), 60 feet thick.—These appear in the Peak Hill at Robin Hood's Bay, at Kettleburn north of Whitby, and in various places round the base of the Cleveland and Hambleton hills, as Osmotherley and Crake Castle. In the Peak Hill the slightly calcereous and iron beds are very fossiliferous, and the species of fossils generally resemble those of Dundry Hill near Bristol. The transition from these beds to the limestone below is very easy and gradual, the base of the one and the top of the other being softened by intervening pale micaceous sands.

Upper Lias Shale, called also alum shale, from having the principal seat of the manufacture near Whitby, let house and workshops at Guisborough, as well as at the works near Whitby, and in the Cleveland hills it gradually loses the thickness in going to the South of England, till near Rievaulx and at Lyme Regis it can hardly be said to exist at all. In these strata lie most of the Sa urian remains and many of the ammonites, belemnites, and other shells for which the Whitby coast is famous. It yields coniferous wood, and changed to jet.

Marlstone.—A series of sandy, ferruginous, and siliceous calcereous beds, which divides the lias shales into parts, and is very rich in fossils, receives this name. At Robin Hood’s Bay, Staithes, and the head of Bliak, it is very conspicuous. Thickness 150 feet. These are the strata which contain opiliius rather frequently freed Stitches.

Lower Lias Shale (500 feet thick).—It forms the base of the loamy cliffs to the west of Staithes, and supports the high moorlands of the carbonaceous sandstones and shales. It continues its thickness, and in its lower part, there are bands of gyptrites, especially where its course approaches the Humber. Hardly any true lias limestone rock occurs in Yorkshire farther north than about the town and Market Weighton. The ammonites and other kinds of shells and the fossil sea-clam of the Lias of Yorkshire, Somersetshire lias, and it contains coniferous wood, are sometimes changed to jet.

New Red Formation.

Red Marls with Gypsum.—These marly clays, with thick occurrences of gypsum (Pooleys, Weighton, Holme), form a band on the eastern side of the vale of York, at the south foot of the oolitic and chalky hills, but, being much eroded by gravel drifted against these hills, are less known for thickness and properties than any other of the fossil strata. They may be several hundred feet thick. It contains no fossils.

Red Sandstone.—This is found on the western side of the vale of York, in an irregularly undulating tract of country, especially about Ripon and Boroughbridge. It has with it a considerable mass of white or yellow sandstone, but near Boroughbridge. Its thickness is unknown; it contains no fossils.

Palesclonic Strata.

Magnesian Limestone Formation.

Brotherton Limestone (45 feet thick).—This is a pure grey limestone, much laminated with clay, and nearly void of magnesia; a few shells occur in the lower beds: they may be several hundred feet thick. It contains no fossils.

Red Clay and Gypsum (50 feet thick).—This is very thin in the vicinity of Fairburn and Brotherton, and has been cut through on the York and North Midland Railway. It separates the nearly pure limestone of the red sandstone from the subjacent red sandstone, and is a continuous bed of rather wet land. No organic remains occur.

Magnesian Limestone (150 or 200 feet thick).—The composition of this important rock is usually a mixture of carbonate of magnesia and carbonate of lime. It has the appearance of the red sandstone, but the structure is atomic. The magnesian limestone is generally of thick, and the grains are often crystalline. Colour usually yellowish, and the quality excellent for the mason, but of uncertain durability. Hildesleyton and Roche Abbey stone are the best in request. Tadcaster yields abundance of lime, and is of good. Spar veins and cavities are uncommon. Small veins of carbonate and sulphate of copper, oxide of iron, sulphate of barytes, and sulphate of stromatococcus occur in the rock. In the vicinity of Garforth the lower beds are often laminaed, north of Whitby, and in the districts of Durham, and yields products and other fossils. Attn. myrtii, nautii, spiral shells, and few corals occur in the limestone near Ferrybridge. The springs which...
Coal from the magnesian limestone often contain carbonate of lime, but seldom much magnesia. The course of the magnesian limestone is in a range of low tabular hills from Mardham, by Harewood to Roche Abbey. These hills are finely escarp to the west and slope gently to the east. The soil is not in general good, especially for grass, but it is applicable to various cultivation.

Observations on the Red Sandstone. or Pontefract Rock. — In places this is 100 feet thick, and consists of brown, purplish, and yellowish sands and clays, with stems and other parts of plants. Near Pontefract it is usually a mass of yellowish sandstone, of the greatest excellence for the use of the metal-founder, and the construction of moulds. This is a property which accompanies it along a great part of its course, which is a narrow belt, on the west side of the magnesian terrace. Between this and the strata beneath it exist several searches for a complete history of the coal formation.

Carboniferous System.

Coal Formation. — From beneath the southern part of the nearly straight edge of the magnesian deposits are the sandstones, shales, ironstones, and coal of the West Riding of Yorkshire, and fill an enormous area in the valleys of the Aire, Calder, Went, Dearm, Dove, and Dun. Leeds, Bradford, Halifax, Huddersfield, Penistone, and other towns, are built to the whole of these strata, while Aberford, Kippax, Pontefract, Elmstall, Conisborough, and Laughton le Morthen are near its straighter eastern boundary. The whole of this large area is penetrated in the shales and sandstones, and only the whole of the district is about 4000 feet thick; and of the coal which lies in this series there are about 20 workable beds, yielding about 40 feet of coal, generally of good quality. Ironstones of excellent quality accompany the lower parts of this bed, and the circumstances of the country permit the full attainment of all these advantages.

In this great coal-field the most useful classifications are made on the nature and accompaniments of the beds of coal. The most complete general view yet made is that given by Dr. Whitaker, in his valuable Geological Map of the County, founded on the succession of grit rocks and shales containing coal and ironstone.

The following is the classification of Dr. Smith, proposed in 1821:

1. Pontefract rock.
   a. Shales and coal beds.
2. Ackworth rock.
   a. Shales and coal.
   b. Chevet rock.
4. Red rock.
   a. Shales and coal.
   b. Bragdore rock.
5. Shales and coal (the shell ironstone).
7. Shales and coal.
8. Flagstone and other rock.
   a. Shales and coal.

The Pontefract rock is here ranked by Dr. Smith among the coal-measures.

Below is the millstone-grit series. The Ackworth rock yields soft freestones, and grindstone occurs at Ackworth, Kirby, Mexborough, and Denaby. The Chevet rock is of limited range and little value. The Red rock, often a coarse gritstone, occurs at Woolley Edge, Newmiller Dam, and Bragdore rock yields freestone and grindstone. The Wortley rock is thin in bed. The flagstone is evenly laminated, micaceous, and yields fine paving and roofing flags.

Beds of coal are worked in the west of Yorkshire as this is 18 inches, yields Huddersfield, and near Barnsley, from 9 or 10 feet (Barnsley), but the average is from 3 to 6 feet. The finest coal of Bradford (called the 'better bed'), and some of the finest Silurian coal, may be viewed near the town of Newcastoe and Durham P. C. No. 1794.
makes in the vicinity of Clithero and Settle, round Pendle Hill, Ingleborough, and Penyghent, mighty ranges of rock four or fifty feet thick, and nearly perpendicular. Farther north and west, near Kirkby Stephen and Brough, it begins to show shaly sandstones, and beds of coal and as we advance into Northumberland these interpretations grow more and more important, the limestones grow thinner and less pure, and the whole group resembles closely the Yoredale rocks as they are seen in Yorkshire. The rock exposed in the mountains above Grosmont Hill in Nidderdale, in Warkworth, in Riddlesdale, about Settle, Clapham, Ingleton, and Kirby Lonsdale. In these cases they are full of caverns of great size and beauty, sometimes giving subterranean passage to the rivers, and forming cavernous breadths here and there. Lead and copper are found in veins in this limestone, but not very frequently. Calamine occurs in it, in the district of Bowland Forest, and oxides of zinc on Malham Moors. The organic remains of the mountain limestone in Yorkshire are extremely numerous and interesting.

Old Red Sandstone.

This rock hardy occurs in Yorkshire except as a conglomerate, locally accumulated in the valley of the Rother, near Rotherham, and not in connection with the mountain limestone which rests on the slaty Silurian rocks, and in its lowest beds contains pebbles of those rocks and lumps of quartz.

Silurian System.

This class of strata appears to be unconfonnable to the limestone series above. It is found in two separate districts: one near Sedbergh, west of the summit of drainage, and naturally associated with Wensomerdale, rising into a characteristic group of hills called Howgill Fells; the other, running almost east and west on the north side of the mountains of Graygarth, Ingleborough, and Penyghent. In both localities slates cleavage disguises the original stratification of the Silurian sediments; the slates are developed at the crest of the moor, near Sedbergh, and about Horton in Riddlesdale, and at Ingleton a greener rock is left in tolerable slate. It is a most singular geological scene which is presented in the vicinity of Ingleton and Horton, for there slate rocks of extremely various qualities, with vertical cleavage and inclined beds, are covered for many miles by a horizontal cap of mountain limestone 500 feet thick. Orthoceras and other fossils occur in the dark thin flags of Horton in Riddlesdale.

Disturbances of Strata.

Such is the series of Yorkshire strata, much thicker, more complete, and more varied than belongs to any other county of the empire. It will be found that three cases of general vertical movement of the strata are of great importance have been noted: the first is between the Silurian and the mountain limestone; the next between the coal and the magnesian series; the last between the oolitic series and the chalk. The prevailing dip of the strata is eastward; indeed, except in the western parts of Craven and in the line of great faults, this general dip is very little modified. In the district of Craven several anticlinal axes of limited extent, mostly ranging north-east, make very slight elevations about Greenhow Hill, Skipton, Lothersdale, and in Bowland Forest. These are often connected with the production of metallic veins. A slight broad anticlinal axis affects the oolitic strata beneath the chalk.

Some of the dislocations, which occasion great vertical movement of the strata, are very striking. The Great Craven Fault, which ranges nearly east and west from Wharfdale to near Kirby Lonsdale, and is in part of this course double, causes a downfall to the south of from 1000 feet to more than 1000 yards, and is accompanied by a distinct and characteristic change of physical geography. North of this line the country rises to the height of 2000 feet, and south of it sinks to a few hundreds of feet. Where this fault turns to the north from near Kirby Lonsdale, and runs in the name of the fault, its effect are everywhere extraordinary, and the western border of Yorkshire derives its peculiar bold escarpment from Wharnside to Mickle Fell from the operation of this fault.

These general curious faults visible in the oolitic and lime strata of the coast near Whitby, and the coal-field is full of them. The magnesian limestone is dislocated near Robin Hood's Well and in a few other places. These and many other fractures of the earth's crust are wholly or principally unconnected with great masses of igneous rock, and devoid of such rocks along the line of failure. Under Ingleborough however a curious red felspathic dyke is seen to coincide with the Craven fault, and a very large and valuable gravel deposit is accompanied by a dislocation of strata, traverses the northern parts of this county, and the southern part of Durham. Some of these beds are near Middleton in Teesdale to near the High Peak, south of Whitby. Along the line of this great 'whinstone' are great quantities of water-falls, and causes the great waterfalls of the Tees and Forest of Bowland. Here are westward 200 feet in others 24 feet thick. It is a sort of 'interposed bed,' which was formed from lava poured out on the sea-bed with some violence and rending of the strata. It is in a few places absolute, and varies in crystallization. The lake have been altered by its heat to white crystalline mass, the sandstones hardened, and the shales locally changed so as to yield in one spot garnets. No particular failures appear to mark its course, and its relation to the local faults of Teesdale and Alston Moor is obscure. Lead-vines traverse it in mines about Hilton and Dunto and yield ore, a circumstance in which it appears to differ from the limestones of Durham, which is also interposed in the limestone of Teesdale.

The authorities employed in the compilation of this sheet of the geology of Yorkshire are chiefly the publications of Professor Phillips (Geology of Yorkshire, vols. i. and ii. Geol. Transactions, 1827; Phil. Magazine and Rev. pass. Professor Smith (Geol. of the county of York, and Dr. Smith (Geological Map of the County). In the Geology of England and Wales, by Conybeare and Phillips, are many useful notices.

Climate.—The great extent of the county of York and the variety of surface over which it is distributed, give rise to considerable differences of climate in various districts. In his 'Geographical View of the Agriculture of the North Riding of Yorkshire,' published in the year 1800, observes that the climate is very much colder than at any other place. From its situation, cold and bleak winds from the north-east and north-west, and especially from the north, traverse the district from the cold August to the cold December. The country is less influenced by heavy rains, impinging in a more severe manner upon these hills, according to the course of the wind. An elevation of about 700 or 800 feet, and a country much rarerified by the warmth of the day, either ascend above the summits, or remain upon them at an elevation in proportion to their rarefaction. As the autumn approaches, the temperature falls; the ground begins to be covered with frost, and the winter season sets in. In the month of November, the winter begins to be more severe, and the spring and autumn months are nearly of equal extent.

In the winter and spring the wind is generally from the north, n.-w. and w., with frequent squalls from the east and east-south-east; but in the summer and autumn the winds are from the north, n.-w., and w., with squalls from the south-west and south-south-west. The climate is generally healthy and salubrious.
The Ouse, which is sometimes called, to distinguish it from other rivers of the same name, the Northwold, is formed mainly by the union of the Ure or Yorc and the Swale, and, according to Langdale and some other writers, takes the name of Ouse at the junction of those streams, about three miles below Boroughbridge, although on some maps it is continued for several miles lower down, to the junction of the Linton. It is stated under Trent and Humber that the total length of this stream from the source of the Swale may be estimated at 130 to 135 miles, and it appears to be about the same if we add the name of the Ure or Yorc as the main stream, which several writers do.

The Ure rises in the high mountains at the western extremity of the North Riding, near to the border of Westmorland, and in close proximity to the south extremity of the Lake of the Eden. It flows first towards the south-west, and then eastward, near Hawes and Askrigg, along Yoredale and Wensleydale to Middleton, receiving in its course several small tributaries on each side, especially on the south side, where it receives one stream from the Simmer lake and another from Bishopdale. A little below Askrigg the Ure falls over a succession of limestone rocks, forming what is called the Aysgarth Force. Below Middleton it is joined on the south by the Cover, a stream of the head of the lower valley of Coverdale; and shortly afterwards it turns more to the south and flows past Masham, a few miles below which place it reaches the boundary-line between the North and West Ridings, and receives on the west side the small stream of the River Bim, which has its origin in the parochial low hills that gradually subside into the level plain of the county. It then pursues a very irregular course by Tankfield to Ripon, where it receives from the right-hand side, one of the principal streams of this county, the former of which rises near Segsworth Fell and flows by Fountain's Abbey. Though a small stream, the Skell is of great utility to the inhabitants of Ripon by supplying them with excellent water. At Ripon the Ure quits the boundary, and enters the eastern district, first running to the south, then to the east, forming the boundary between the north and the much more important river Nidd on the Ouse river. The Ouse runs about 4500 miles north from the York, and from that city near Cawood its course runs southward, into a little inclining to the west, and forms for the most part the boundary between the Ainsty and the East Riding. Near Nun-Appleton, a little above Cawood, it receives the Wharfe, which forms the southern limit of the Ainsty, and in the remaining part of its course the Ouse constitutes the boundary between the East and West Ridings. Inclining now to the south-east, it pursues a very irregular course by Cawood and Selby, and after receiving successively the Derwent from the north, and the Aire with its tributaries from the south-west, it pursues a very tortuous course near Howden, and by the newly-formed post of Goole, where it is joined by the Don. To the north of York, the Ouse rises and descends through various valleys and passes into the ocean. [Trent and Humber.] The Humber is navigable as far as Hull for ships of the largest burthen, and from seven to eight miles upstream from the mouth of the Don. Vessels of 140 to 150 tons burthen can ascend the Humber as far as York, while barges of 30 tons may ascend the upper part of the river. The Ure is navigable for barges up to Ripon, and the Ure and Don can be ascended by vessels of 30 tons. More than half a century since a lock 21 feet wide and 70 feet long was erected on the Ouse at Naburn, four miles below York, previous to the formation of which the tide ascended above that city, and, according to some accounts, flowed to the height of four feet at the Ouse Bridge.
York, a distance of 80 miles from the sea. But according to a map of the environs of York, published by W. Palmer in 1725, and referred to in the 'Geography of Great Britain,' the spring-tide was only two feet at York, six feet at the mouth of the Wharfe, and ten feet at that of the Derwent. The same writer refers to Drake's 'Eboracum,' to show that the greatest rise at York, before the lock was made, was two feet or two feet and a half, and observes that these facts serve to show the nature of the York plain, and that a very small permanent change in the water-levels of the sea and land would turn the valley of the Ouse up as far as York, and the corresponding valley of the Trent as far as Newark, into sandy estuaries. The Ouse and its principal northern tributaries have been the subjects of several acts for the improvement of the navigation; and Priestley, who gives a full account of these, observes that notwithstanding the limited trade of that portion of the Ouse above the city of York, it 'has such an immense traffic in the lower part, by reason of the numerous rivers and canals immediately communicating with the manufacturing districts of Yorkshire and Lancashire, in addition to the coal-mines, stone-quarries, and various iron-works situated in the West Riding, as will undoubtedly rank it the second river of the kingdom in importance and use by its union with the Humber. Manufactures of the merchandise is exported to and imported from all parts of the world.'

The Swale is formed principally by two streams, which, rising respectively near two hills called the Lady's Hill, and Flaw Hill, are its sources from the Ure, and the latter of which has an elevation of 2239 feet, flow in an easterly direction along the opposite sides of the high ground called the Water Crags, which has an elevation of 1220 feet, until, after the said mentioned and principal branch having turned to the south, after flowing through the valley called Swale Dale, they unite at Muker. From Muker the river has an irregular course towards the east to Richmond, before reaching which place it receives several other tributaries, principally from the northernmost part of its basin. The most important being the stream which flows along Arkingley and Aysgarth Dale, and the little river Marske. Below Richmond its course inclines somewhat to the south, and it receives, together with several minor streams, the river Ouse on the left bank. On reaching Bowes near Northallerton, it inclines suddenly to the south-south-east, and runs parallel to a ridge of hills which separates it from the valley of the Wiske; and in this part of its course it receives on the western side a considerable stream, which, rising near Cogdon Haugh, at a very considerable distance from the upper course of the Swale, flows past Bedale, and conveys the drainage from several other streams into the Swale, and also affords facilities for navigation, which, being cascaded, many falls, is so changed by improvements; but though an act was obtained for the purpose, the intended navigation was never completed. Langdale styles this stream Bedale-beck, but it is sometimes called the Bedale river. A few miles farther south, in the latitude of Thirsk, the Swale is joined by the Wiske, a stream which rises near Osmotherley, on the west escarpment of the Eastern Moors, and after flowing for some distance northward towards the Tees, turns westward past Great Smeaton, near which place it is crossed with some small lakes, and then turns southward beneath Dunkery Wiske, and near Northallerton, until, having passed the southern termination of the ridge which separates it from the Swale, it inclines westward, and joins that river. From this juncture, in the course of the Swale Dale, it continues its south-south-east direction to its junction with the Ure, receiving in its course two considerable streams which descend from the Hambleton Hills, on the escarpment of the Eastern Moors, the northern and most important of which is the river Ure. It also receives, running up the peculiar rock 286 feet high, which forms the centre of a romantic amphitheatre of limestone rocks called Malham Cove, of which there is a view in Dr. Whittaker's History of Yorkshire, a little above Cowood, and which may be considered the termination of the high land in this direction, the ground to the east of that place forming part of the great level of the Vale of York. The course of the Swale, wherever it forms the boundary-line, is wholly within the West Riding of Yorkshire, though very tortuous.

The source of the Aire, Air, or Aire, is in Malham Tarn or Water, five or six miles east by north of the town of Settle, in the district of Craven, among the Western Moors, and is about a mile south from this lake which gives it its name; but for about a mile south from this lake the river runs through the most remarkable part of the country, a peculiar rock 286 feet high, which forms the centre of a romantic amphitheatre of limestone rocks called Malham Cove, of which there is a view in Dr. Whittaker's History of Yorkshire, a little above Cowood, and which may be considered the termination of the high land in this direction, the ground to the east of that place forming part of the great level of the Vale of York. The course of the Swale, wherever it forms the boundary-line, is wholly within the West Riding of Yorkshire, though very tortuous.
whether the stream which issues from Malham Cove is actually that which enters the earth at Malham Tarn; but according to the statements of others in that county, in seasons of heavy rains, the Tarn overflows itself, the waters spread themselves over the surface of the rocks; and at length reaching Malham Cove, are precipitated over the centre of the precipice in a vast cataract. This phenomenon, which also rises one of the most extraordinary among the contracted dimensions of the subterranean channel, the opening of which, at the base of the Cove, is at such times evidently sufficient for the escape of the swollen and turbid stream. The course of the Aire, and of those streams which rise in the Calder, as it winds its way through the Calder valley in a direct line, is generally towards the south for a few miles, until, near Gargrave, it is crossed by the Leeds and Liverpool Canal, which passes over it by a large aqueduct at an elevation of 111 feet above the sea at low water, and which from that point follows the valley of the Aire. The Calder, and the levels of which, hereafter noticed, will give some idea of the descent of the valley. From Gargrave the general course of the river is south-east, passing to the west of Skipton, in which town there is a fall of 495 feet, of Keighley, and north of Bradford, along the picturesque valley of Airedale, to Leeds, in passing its course the ruins of Kirkstall Abbey. At Leeds the canal terminates, the river itself being made navigable below that town. The Calder receives the river Wharfe there, where it receives the Calder from the west, and from which point it pursues a very irregular course, the main direction of which is nearly due east, but inclining a little to the south, by Knottingley, Ferrybridge, and Kellington, and passing the town of Wakefield, which is west of the northernmost side of the Calder. From the south, and from this junction it runs east by north for five or six miles (direct distance) to its junction with the Ouse at Askeldy Island, near Armin, or Airmyn, a little to the east of Pontefract and near Wakefield, with the Aire, with its important tributary the Calder, for the purposes of navigation, forms an important feature in the history of this class of improvements, these rivers having been made navigable under the powers of an act passed in 1825, and which vessels of 100 tons burthen, prior to the date of any enactment for a canal navigation. As before intimated, the Aire is not navigable above Leeds; but under the powers of the act referred to, the navigation was formed, from that town to the junction with the Calder, the distance of 11 miles, in which there is a fall of 495 feet, effected by six locks, and also from the junction of the two rivers to Weeland, a farther distance of 18 miles, with a fall of 314 feet, by four locks, making a total navigable length of about 30 miles, with several short constrictions, and extending to quarries and collieries in the vicinity. An unsuccessful attempt had been made to obtain an act for his navigation as early as 1823, and when it was revived, the act passed in 1825, and under which the navigation has been formed, for the proprietors of the Aire and Calder Navigation Company, were given powers to have formed a canal from Ferrybridge, through Knottingley, which runs in a direction nearly parallel with the river, but more rectified, and lying south of it, by Egborough and Heck, to the junction of the Ouse at Goole; the eastern portion of this canal, from the Don to the Ouse, being merely parallel to that branch of the Don, or Dun, which is commonly called the Dutch river. The total length of this cut is about 18 miles, and it falls, to low-water mark at Goole, 293 feet. Goole was the most important town on this branch of the river, containing only a few houses; but in consequence of the construction of the canal, and of the place having received, in 1828, the privileges of a port, it has risen so rapidly in importance as to contain, in 1841, 479 houses, and a population of 3,008 souls, as stated in Mr. Remie, but executed by Mr. George Leather. By the various improvements which have been effected from time to time by the Aire and Calder Navigation Company, the navigable has been rendered available for vessels of 100 tons burthen, which are aided by steam-tugs, as far as Leeds on the Aire, and Wakefield on the Calder. For the Calder, the principal tributary, the Aire rises on the high ridge called the ‘Backbone of England,’ just beyond the county boundary, in the adjacent county of Lancaster. Its principal source is in a marsh in Olivers Dean, a little to the south-east of Burnley, from which rises also the feeder of the West Calder, a stream which, flowing westward, joins the Ribble. The waters of its several sources are collected together in the deep and romantic valley of Todmorden, and flow with a very winding course through a deep and often exceedingly romantic vale, before reaching the town of Sowerby, about two miles south of Halifax, north of the hill called Bank Top, by Elland, Dewsbury, Horbury, and Wakefield, from which place it inclines a little towards the north to its junction with the Aire at Castleford. The course from near Todmorden to Hollinshead and the Rochdale Canal runs in the same narrow valley as the Calder; and as this valley has also been selected for the turnpike-road and the Manchester and Leeds Railway, there are many parts along several lines of communication jostle and intersect each other in a most remarkable manner, the valley being frequently so narrow as scarcely to leave room for them all. The river has consequently been diverted from its natural course in several places by such lines of communication, the streams which descend from the high lands on each side of these the principal are a stream which joins it on the south side, near Sowerby Bridge, at the foot of the Bank Top mountain; the Hebble, a rapid stream which descends from the mountains near Hebden Bridge, near Halifax, and joins the Calder at the termination of the Rochdale Canal; the Colne, which rises near the boundary of Derbyshire, and flows by Holmfirth and Huddersfield in the northern and north-eastern direction, which has several sources in the country between Barnby and Wakefield, and flows north by west into the Calder. The portion of this river which was made navigable by the Aire and Calder Navigation Company, and which now forms the main branch of the canal, extends a distance of about 27 miles, with a fall of 212 feet, effected by twenty-eight locks, forms the connecting link between the Rochdale Canal and the Aire and Calder Navigation. The line was surveyed by Smedley, and under the act passed in 1798, but improved and extended under subsequent Acts, one of which, passed in 1825, empowered the proprietors to branch a canal from Halifax. The difficulties attending the formation of this navigation, besides those of any other works in the valley of the Calder, by the number of mills established upon the streams, the rights of which has been necessary to regard. These difficulties, in the case of the Halifax branch, led to the supply of the canal with water by means of a drift 1170 yards long, from the basin of the canal at Saltershebbie to a pit beyond the uppermost lock, whence it is raised to the summit level by a steam-engine. In this branch, though only 1 mile in length, there is a rise of 1004 feet. Several short private canals and railways communicate with the Calder valley, the charter of the company of the Don or Dun, the only remaining tributary of the Aire which requires special notice, rises near Saltersbrook, upon the high ground called Snealiden or Snailaden Pike, near the border of Cheshire, and a few miles west by north of Penistone. It pursues an easy direction, and has been extended to the latter place, and then turns south-east towards Sheffield, receiving on its way the little Don Dun, which rises near the same point, but flows in a straighter direction along Mickapebble-dale; the Ewen brook, the many small streams passing farther south, descending from the high lands on the border of Derbyshire, and skirting the northern escarpment of Bradford Moor, and the Loxley river, which descends from the southern escarpment of the Bradfield, meeting two or three short tributaries, which, from the Riveling, descends from Lord’s Seat, near the county boundary. For the whole of this distance, and also for some miles below Sheffield, the Don rises again, feeder from the north or north-eastern
hemmed in by a ridge nearly parallel to its course. At Sheffield it is joined by the Shaf or Sheaf, which rises in the Derbyshire mountains, and runs north-north-east, and receives another small stream from the south-west. From Sheffield the Don runs north-east by Rotherham and Doncaster to Thorne, where it turns north, and runs to the Aire just below Skanith. The principal tributary of the Don up its course is the River Rother, which rises in Derbyshire [D'Anvilles, vol. viii., p. 418], enters Yorkshire a few miles south of Rotherham, and joins the Don at that town; the Dearn, or Darwen, the largest stream in the region which rises in the hill called Down Moor, to the north of Penistone, and flows first north-east and then south-east, collecting the waters of several tributary streams, by Barnsley and Darfield, below which place it receives from the west the little river Dove, to its junction with the Don near Conisbrough; a stream of considerable length which descends from Hemsworth, Kirkby, and Clayton in the Clay, and flows westward to the Don at Barnby, and the Went, which originates in the last slope of the high lands on the west of the Ouse valley, and flows by Wentbridge and Kirk-Smeaton to the Don about midway between Thorne and its junction with the Aire, receiving some minor streams in its way.

The navigation of the Don or Don reaches commences at Thorne, south of Rotherham, at which point the river rises, and is continued by the Sheffield section of the general system of navigation, although part of it is derived from the general system of navigation, though forming part of the same extended line of communication; but in many parts below that point a navigation is effected by artificial cuts to avoid bends and determines the bed of the river. The first act for the navigation was passed in 1726, and there have since been several others, of which that of 1828 empowered the company of proprietors to make very extensive improvements by new cuts and other works. The portion of navigation from Thorne to Doncaster, which by the old course is 21 miles long, is reduced to 18 miles, with a fall of 674 feet by eleven locks. From Doncaster to Fishlake Ferry, near Thorne, the navigation is continued in like way, sometimes in the old course of the river and sometimes by the new, and is continued by further improvements from 12 to about 101 miles. From Fishlake Ferry to New Bridge, near Snaith, is a distance of 54 miles, and from this point the antient and natural course of the Don was, as before stated, nearly due north to the Aire; but the navigation, instead of proceeding along it, turns east-south-east to the Ouse by the nearly straight cut called the Dutch river, the length of which from New Bridge to Goole is 52 miles; and in consequence of this the old course in the old channel has been allowed to silt up. The channel of the Dutch river formerly consisted of two parallel ditches, cut during the reign of Charles I. by Sir Cornelius Vermuyden, for the purpose of draining the lowlands in the vicinity of Hatfield Chase, and its success is shown in the immense reduction of the lands so benefited. In 1688, during a great flood, the sluices at Goole were carried away, and the ditches, which consequently obtained entrance to the drains, destroyed the intermediate division, leaving nothing but the outboard works, and converting the channel into a very wide canal, which at high water during spring-tides is navigable for brigs of 300 tons burden. The bridges over this channel are made moveable, to allow the passage of masted vessels. The total length of the improved Don navigation is about 310 miles, with a total rise from low-water mark in the Dutch river of 924 feet, effected by six locks. Priestsley says that when the tide flows 15 feet at Goole it will only flow 7 feet at Fishlake, and 34 feet at Barnby Don Ford. Besides the cuts made by the Dutch, the navigation is joined by several private cuts from the Masborough Iron-works and the Greensborough coal and iron works; and Priestley observes that it is of the utmost importance for exporting the produce of the extensive coal and iron works which abound at Barnby Don Ford. Principal among the manufactured iron goods and cutlery produced in Sheffield and its neighbourhood. The trade of Rotherham, the limestone and plaster at Spratbrook and other places on the west side of Rotherham, and of the agricultural produce of the neighbourhood of Doncaster, also contribute considerable branches of traffic; while the imports embrace every article required for the supply of an extensive and populous manufacturing district.
mbly; and the river Costa, or Pickerick-beck, descends from Stakehole Moor, along Newton-dale, and by the town of Pickerick. From the junction of the Rye, which gives rise to the waipenteke of Ryedale, the Derwent flows by New Malton through a beautifully diversified district, past the town of Selby, and turns south-east, forming the eastern boundary, when the course of the River Hull, which rises near the county boundary at Grindleton, it turns south-west above Osburne, and continues in this direction along the border of the county for a few miles, past Clitheroe, until the boundary turns northward, while the Ribble pursues its former direction through Lancashire. The Hodder also, a feeder of the Ribble, rises in this county, near Bolland Knott, to the west of Settle, flows south-west to the boundary of Lancashire near Blesdale Moor, and turns north-west forming the county boundary as far as its junction. For a further notice of these rivers see Lancashire, vol. xii., p. 290. The Tees joins the county boundary at its north-western extremity, at the junction of Yorkshire, Westmorland, and Durham, in the Lune Forest, and it continues to form the boundary between Yorkshire and Durham for the whole of its course from that point to the sea. This river itself is not sufficent here to notice its principal tributaries on the Yorkshire side, which are as follows: the Lune, which rises near the border of Westmorland, and flows north-east through Lune Forest, collecting rivulets from the hills on each side, to the Tees a little below Middleton; the Bander, which flows in the same direction, and enters the Tees about midway between the junction of the Lune and Barnard Castle, passing in its course those hills in Stanhope Forest which, in consequence of the height of Robin Hood's Bay, near the name of Robin Hood's Butts; a similar stream which enters the Tees at Barnard Castle, and is called the Deepdale river; the Greta river or beck, sometimes called the Barney, the longest branch of which enters the Tees near Barnard Castle, and pursuing the same general course towards the north-east by Great Bridge to the Tees, a considerable length between Bowland and Brignall being nearly due west and east, and, after part of its course towards the north, small streams which rise near Brignall, and, flowing nearly parallel with the Tees towards the east, passes by Birsting, Hutton, Stanwick, and Barton, to the Tees at Croft; and the Leven, which collects the waters of numerous rivulets from the northern part of the Eastern Moors, rises near the Tame from the vale of Cleveland, and, flowing westward by Stokesley to Rudby, thence turns north by a winding course to the Tees below Yarm. Still further eastward, small streams rise on the south side of Cleveland, and, flowing directly to the sea, one of the principal being that which passes by Guisborough and enters the sea at Saltburn.

The other streams which rise in this county, but soon cross the boundary into the adjacent counties, are of but little importance; the chief one is the river Derwent, which rises to the east of Rotherham, flows westward into Lincolnshire, and there joins the Idle; the Tame, a tributary of the Mersey, which leaves Yorkshire at its junction with the Cheshire and Lancashire; the Wenning, at the border of Westmorland and Lancashire, which rises north-west of Settle, and flows westward into Lancashire; the Greta, being a second rivulet of that name, which rises at two points near Wharnside, and, flowing westward into Lancashire, unite, and turn westward across the county boundary to the Lune, a short distance north of the Wenning; the Dee, which rises north-east of Wharnside, flows west by north along Dent-dale to Sedbergh, where it enters the western county, and, after forming the county boundary for a short distance, enters the Lune in Westmorland; and the River, the second river in the county of that name, which rises on the north-west boundary, near the sources of the Eden, flows first north-west across the Yorkshire, and then turns southward by the Calf and Castler Crags and the hill called Seter to Sedbergh, where it receives a stream which flows west through Gardale, and below which place it joins the Dee.

**Grammar.**—The North Riding of Yorkshire is almost entirely destitute of either artificial canals or navigable rivers, and the canals of the East Riding are few and unimportant; but the West Riding is peculiarly rich in the species of communication, while the exceedingly difficult state of the country through which the principal canals have been conducted has rendered necessary the construction of engineering works of astonishing boldness and magnitude in order to effect navigable communication.
of the section given by Priestley of the inland navigation between the ports of Liverpool, Goole, and Hull, by the river Mersey, the Duke of Bridgewater's and Rochdale Canals, the Calder and Hebble Navigation, and the rivers Ouse and Humber, a distance of 1584 miles by that route. Commencing along the tideway of the Mersey, the level is suddenly raised by locks at Runcorn to an elevation of about 90 feet above the level of the Manchester. The next material rise takes place beyond Manchester, on the Rochdale Canal, which, in a distance of 17 or 18 miles, rises to the summit level near Stansfield, at an elevation of 600 feet above low-water line on the Mersey, at Liverpool, according to the section, or, as it was termed by Walls, the Inland Navigation of Great Britain, which with Priestley's work was published as a book of reference, 6100 feet above the sea at low-water. From this point, which is about 90 miles by the navigation from Liverpool, and a very short distance west of the western boundary of Yorkshire, the level of the canal falls very suddenly to Todmorden, and after entering Yorkshire continues to descend, until, at the junction with the Calder and Hebble Navigation, about 73 miles from Liverpool, the elevation is only about 270 feet. From this point the descent, though far less rapid, continues considerable until arriving at the junction of the Calder and Hebble and Aire and Calder Navigations at Wakefield, while the total fall in the remaining distance of about 62 miles, is only about 300 feet. Other lines of communication from the Irish Sea to the German Ocean are formed by the more circuitous route of the Leeds and Liverpool Canal, together with the Aire and Calder Navigation, and the more direct routes of the Aire and Huddersfield canals, which communicate with the Calder and Hebble Navigation through Sir John Ramsden's canal. For convenience of reference the principal canals of Yorkshire may be noticed in alphabetical order.

The Calder and Hebble Navigation has been sufficiently noticed under the rivers from which it takes its name. It forms a connection between the Ouse and Humber on the south-east, the Leeds and Liverpool Canal on the north-west, the Calder and Hebble Navigation on the west, and the various artificial rivers of the south, and runs through several private canals and railways to mines and quarries, especially in the vicinity of Leeds and Wakefield.

The Barnsley Canal was formed under an act of the year 1799, additional capital being raised by the company for paying off their debentures, and opened by a second act in 1806. It commences in the Calder, a little below Wakefield Bridge and the junction of the Calder and Hebble Navigation, and proceeds southward for about 10 miles, and from first 21 miles of it is effected by 15 locks. It then turns westward, and, after crossing the river Dearne by a stone aqueduct and forming a junction with the Dearne and Dove Canal, passes Barnsley and extends to Barnby Basin, in the township of Cawthorne. It communicates with the Silsden collieries. The latter part of its course has a rise of 40 feet by five locks, but of its total length of 151 miles 11 miles form one level. This canal was opened in 1799, and has been both highly profitable to the proprietors and useful to the neighbourhood, introducing Silsden stone coal to the London market, and aiding the cultivation of the moor-land in the vicinity of Barnby Basin.

Beverley is a short canal or creek connecting Beverley with the river Hull, which presents a fit state for navigation under acts passed in 1726 and 1744.

The Bradford Canal, formed under an act of 1771, and completed in 1774, is a cut of about three miles from the Leeds and Liverpool Canal southward to the town of Bradford. The cut is 864 feet by ten locks. It is very useful for exporting paving-stone, coal, and iron from the neighbouring parts, and has been the main cause of the establishment or extension of several iron-works, some of which communicate with Bradford by private railways. Wool is also an article which this canal is instances in the importance of the soil manufactures of Bradford and its vicinity.

The Calder and Hebble Navigation, a considerable portion of which consists of artificial works, is noticed under Sir John Ramsden's Canal, the Rochdale Canal, and by its branch, with the town of Halifax on the west. It was projected solely for the purpose of affording facilities to the manufacturing district west of Wakefield, but it has become of more importance in the navigation by the Rochdale and Huddersfield Canals, and the artificial rivers and canals by the artificial rivers and trees by the materials of Manchester and Rochdale were brought by land-carriage across the central ridge of mountains to this navigation at Sowerby Bridge, but the opening of the canals occasioned a vast accession of inland traffic and brought very large profits to the proprietors of navigation.

The Chesterfield Canal, which belongs chiefly to Nottinghamshire and Derbyshire [Norton Manning, vii., p. 399; Deazavaxis, vol. ii.,] and runs from the southern extremity of Yorkshire between Shire Oak and the village of Wales, near which there is a tunnel of 56 yards upon the summit level of the canal.

The Dearne and Dove Canal, constructed between the years 1739 and 1760, commences at Dewsbury, in a spot which forms part of the Dun or Don navigation, and proceeds north-west to the aqueduct for conducting the Barnsley Canal across the river Dearne near Barnsley, a distance of 25 miles, with a rise of 12 feet, by eight locks. It has a branch of two miles to Worksop, and is connected by a railway with extensive collieries on Stainbro' Hall; and there is also a branch canal 15 miles, belonging to Earl Fitzwilliam, to the latter works. The chief objects of this undertaking are the communication of this district about its water-extremity, and the exportation of the manufactures of Barnsley through the port of Hull.

The Derwent River Navigation is sufficiently noted in the account of a stream under the name of the Derwent.

The Driffield Navigation commences in the river at Aike Beck Mouth, about 44 miles north of Beverley, and about 1420 miles north of the junction of the Leven and the Aire. For a distance of 20 miles northward the rivers are navigable, chiefly as artificial rivers, and are continued by the short distance up Frodingham Beck, the chief head of the Hull, which has a short private cut-off to Foston Hall, but a little north of the junction of Frodingham Beck with the Hull the canal leaves the former, and proceeds to Kirkbridge, a distance of 127 miles, and then passes into the Humber, and finally into the south. The navigable canal, formed under an act of 1767, is used for the importation of coal from the West Riding, timber and merchandise from Hull, and the exportation of wool and other produce.

The Dun or Don River Navigation is described under the river Don; so likewise is the Foss Navigation under the river Foss.

The Hedon Haven Navigation, from the Humberside is an artificial river of Holderness, is of very little importance; it was the subject of an act passed in 1856. It is a natural creek or stream improved for the purpose of navigation.

The Huddersfield Canal, which was formed under an act of 1787, and acts passed in 1800, and 1806, is one of the most important works in the kingdom, considering its limited extent ever executed. The projectors perceived that it was possible to form a canal in a tolerably direct course between that made by Sir John Ramsden from the Aire and Hebble Navigation to Huddersfield and the Aire-under-Line Canal, then approaching completion, was to supply the most direct line of communication between the eastern and western seas, and they determined opening the present line, which was surveyed by Mr. John Browne; but the almost unprecedented difficulties of the works compelled the proprietors to increase the capital before the central portion was completed; this part of the canal was opened in 1798. The canal as far as Huddersfield is fitted for water traffic, and is capable of admitting boats of twenty-four tons burthen, commences the south of the town of Huddersfield and crosses the river Colne. A branch canal is in consequence of the importance of the manufactures of Bradford and its vicinity.
are hauled through this tunnel by manual labor in about an hour and twenty minutes. Emerging from the tunnel at Diggles, the canal pursues the same direction by Siddaleworth, through it a second time, and by the same route for several times, and after running parallel with the boundary of Lancashire for some miles, it turns westward near Duckinchfield, and passes for a very short distance through the valley of the Calder, its junction with the Ashton Canal. Its length from Huddersfield to the summit-level is 74 miles, the level itself 4 miles, and the descending slope, which has a fall of 3334 feet, by thirty-three locks, 84 miles, making a total length of 194 miles. The summit tunnel, which winds through the tunnel, is 5 feet wide and 17 feet high, the depth of water being 8 feet, and the height above the water 9 feet; and there are on the western slope two other tunnels of 204 and 136 yards respectively.

The navigation across the island by this route is 22 miles short, and by the use of its utility to the manufacturing district through which it passes is very great, both in the importation of raw materials and the exportation of manufactured goods.

The Huddersfield and Leeds Canal, which extends about three miles eastward from the river Hull to Leven, for the conveyance of lime, manure, corn, and other produce, was formed by a private individual, under the powers of Acts passed in 1801 and 1805. It is sometimes called the Leven Canal.

The Knottingley and Goole Canal, forming part of the Aire and Calder Navigation, has been described in connection with the river Aire.

The Leeds and Liverpool Canal, which is partly described in the Notice, vol. xii., p. 290, commences at the north-western termination of the Aire and Calder Navigation at Leeds Bridge, proceeds a short distance along the river Aire, and then enters an artificial tunnel, which pursues the course of the river on the south side of that river, following all its windings to Shipley, where it receives the Bradford Canal, having a rise in this portion of its course of 158 feet 7 inches. From Shipley it proceeds westward to New Mill, where it enters an aqueduct, which is crossed by the road from which the name of Gargrave is derived. This aqueduct, 800 feet long, is near the summit-level of the canal; the descent is about 35 feet to the river, and is concluded by a lock. Beyond Gargrave the canal turns south-west, crosses the Aire again by a large aqueduct, and runs southward across the Craven Moors, attaining at the summit-level at Greenfield, near Todmorden, the summit-level of the canal, and 200 feet above the level of the Aire at Leeds. Beyond Gargrave the canal runs north-west, crosses the Aire again by a large aqueduct, and runs southward across the Craven Moors, reaching at the summit-level at Greenfield, near Todmorden, and 200 feet above the level of the Aire at Leeds, and about 500 feet above the level of the sea at low-water. On the summit-level it receives a branch from the Hainstone-quarries at Rainhill Rock; and this canal continues beyond the point where the canal enters Lancashire and Yorkshire, near Colne. The length from Leeds to the summit-level at Greenfield is 41 miles. This great undertaking was forty-six years in progress, and was not completed so as to allow vessels to pass from Leeds to Liverpool until 1810.

The Market Weighton Canal is important both for the purposes of navigation and the drainage of the low levels through which it is conducted. It commences at a point called New River Head, near Market Weighton, in the East Riding of Yorkshire, and having a nearly straight course to the south, joining the Humber by a sea-lock very near the commencement of the Ouse and Trent, passing through Walling Fen, which contains 20,000 acres of land. It is supported by an acreage tax upon the occupiers of the lands drained by it, and the cost of the canal is about six million pounds sterling. It crosses an agricultural and manufacturing district in a beautiful and durable kind of brick, called the Walling Fen brick. It was made under an act of 1772, and was finished in 1776.

Mr. Whitworth.

The Ouse River Navigation is described among the communications on the previous page.

The Poolington Canal was formed under an act of the year 1815, for the conveyance of coal and lime to, and agricultural produce from, the neighbourhood of Poolington, in the East Riding, near the Welles. It commences in the river Derwent at East Cottingham, and runs nearly parallel with one of its feeders, in a circuitous north-eastern course, to near Pocklington. It length is about 25 miles, and it carries five locks.

Sir John Ramsden's Canal commences at the river Calder, at Cooper's Bridge, and runs south-west for about 34 miles to Huddersfield, with a rise of 93 feet. In addition to its importance as a link in the navigation, the island by the Huddersfield Canal, this navigation has been the chief means of raising the town of Huddersfield, which was built chiefly on Sir John Ramsden's property, to its present position as one of the chief markets for woollen goods in the county. The act for its formation was obtained in 1774.

The Ripon Canal is a short cut parallel with the river Ure, for connecting Ripon with the navigable part of that stream. The Rochdale Canal commences in the Calder and Hulhe Navigation, at Sowerby Bridge Wharf, near Halifax, and runs west by norh along the valley of the Calder to Hebden Bridge, where it turns with the river west by south, leaving the county of Yorkshire, where it enters Lancashire. [Lancashire, vol. xiii., p. 290.] It rises considerably on this part of its course, but does not attain its summit-level till after leaving the county. This canal is made of sufficient size to receive vessels capable of navigating the tides of the Humber, and in this respect is of great importance, that goods may be transmitted by it from Liverpool to Hull without change of vessel, a circumstance of great importance in the transmission of Baltic produce into Lancashire, and of the manufactures of Lancashire to Hull for use in the coal mines of Yorkshire.

The Selby Canal is a short cut connecting Selby, on the Ouse, with the Aire at West Haddlesey. It is alluded to in the account previously given of the navigation of the Aire-borough canal.

The Sheffield Canal, made under an act of 1818, commences in a cut communicating with the river Don or Dun at Tinsley, and pursues a course of a little more than four miles, nearly parallel with the Don, to Sheffield, crossing the river Don by the bridge at Attercliffe. It rises rather more than 70 feet, by eleven locks. This canal communicates, by a railway previously formed, with collieries in the parish of Handsworth.

The Stainforth and Keadby Canal, formed under acts of the years 1798, 1799, and 1804, commences in the River Don Navigation, near Stainforth, and proceeds eastward by Thorne into Lincolnshire, where it joins the Trent at Keadeby, crossing the county boundary near Crowle. Its total length is 147 miles, and contains the town of Doncaster. It crosses the county of Yorkshire, and passing through a very flat country, it has no lock, except at its junction with the Trent. By avoiding the shoals in the lower part of the Don, this canal affords a superior line of communication with Hull and the East Riding, as well as with Lincolnshire, to that by the Don and the Ouse.

The Thamet Canal is a short branch from the Leeds and Liverpool Canal to limestone-quarries near Skipton, formed by the Earl of Thame, under an act of 1773.

The River Ure Navigation is noticed under the river itself, and a part of it also under the title of the Ripon Canal.

Roads and Railways.—Marshall, in his 'Rural Economy of Yorkshire' (vol. i., p. 190, 290), mentions the very bad condition of the roads of Yorkshire within his memory, owing to improper modes of road-making and repair; but he intimates that considerable improvements had been effected before he wrote (about the year 1786), and mentions, among others, the road from York to Doncaster as a favourable specimen. A few years later, in the 'General View of the Agriculture of the West Riding of Yorkshire,' drawn up by Messrs. Reen, Brown, and Shirreff (pp. 36-57), he says: 'As the present direct communication is a great improvement on the number of good roads, and although that which was then different, chiefly from the deficiency of good stone for forming the surface, especially near the manufacturing towns; a circumstance which called forth the ingenuity of the road-makers in York and Leeds, to invent new materials of brick in lieu of harder materials. Owing to the frability of these materials and the great number of water courses travelling from town to town, some of the most important roads were in a very bad state; but great improvement had been effected in the exteriors of cities, and the country roads of the west, with the exception of the east, have continued to improve.'
roads and facilitated the employment of good stone from a distance. In this paper allusion is made to the paved foot-paths formed by the side of many roads, but which were also in some cases used as bridle-roads, on account of their being open and unobstructed. Many of the roads in the North Riding, those in the district of Cleveland especially, are very good, and there are numerous handsomely-bridged. Those in both the Eastern and Western Moorlands, but especially in the former, are narrow, steep, and rough, and in the East Riding the roads usually are. Wolds are inferior to those in the Levels. Those of Holderness, and in the vicinity of Howden, are chiefly formed of gravel from the sea-shore, but burnt bricks of irregular form, broken up to imitate stone, are still used in some parts of the wolds.

Of the roads of the North Riding the large proportion are merely pariahs-roads, and in the East Riding the proportion of turnpike-roads is still smaller. For the aggregate length of turnpike and other roads in the county and its several divisions, see the Table appended to the article ROADS, vol. xx. p. 37.

The great north road from London to Edinburgh, by Coldstream or Berwick, enters Yorkshire from Nottingham-shire at Bawtry, and proceeds in a tolerably direct course, but the north, inclines a little inward, by Doncaster, Ferrybridge, Wetherby, Boroughbridge, and Northallerton, to the border of Durham, near Darlington. A branch leading also to Edinburgh, by Carlisle, leaves this line at Boroughbridge, proceeds nearly parallel with it by Leeds, Wetherby, and aftershand turns westward by Greta Bridge, and enters Westmoreland near Brough; while another route from London to Edinburgh leaves the first-mentioned road at Ferrybridge, proceeds north to Sheeburn and Tadcaster, and then inclines north-west to York. This city is crossed by a north-western branch of the line, which, from York to Darlington, is less than 45 miles long, of which length upwards of 45 miles is in Yorkshire. It was opened for traffic early in the year 1841.

The Hebburn and Wentbridge Railway is a line about 74 miles, formed under an act of the year 1836, commencing at Hebburn on the coast of Durham, and proceeding northward to York, and thence to a branch line crossing that river and the Tees, with their several approaches, are among the most extensive engineering works of the line, which, from York to Darlington, is less than 45 miles long, of which length upwards of 45 miles is in Yorkshire. It was opened for traffic early in the year 1841.

The Hull and Selby Railway, formed under act passed in 1836, is said to be, considering its length in straightest and most level line in England. It crosses for the most part the parishes of Hedon, Lissett, and Barmston, and was propelled for the purpose of conveying stone from the quarries of Westbridge and Stainfleet to the city of Hull. The line is 20 miles long, and opened in 1838.

The Hull and Selby Railway, formed under act of the year 1830 and opened in 1834, continues the communication westward from the main mentioned line, for the most part on the same straight line, by Sherburn-in-Elmet, and the town of Selby, a distance from the line of nearly 30 miles. A little eastward of the town of Leeds the railway passes an elevated ridge by a tunnel of about 800 yards. The line is leased to the York and North Midland Railway Company.

The Manchester and Leeds Railway, the act for which was obtained in 1836, was commenced later in 1837, and opened throughout in 1841. Following the same course as the Rochdale Canal, this line enters Yorkshire near Todmorden. Of the several towns in this woollen district in the West Riding, and also between the West Riding and Lancashire. Of the railroads of Yorkshire it is unnecessary to particularize such as have been formed merely for communication with mines and quarries, for the most part in the hands of individuals, and without parliamentary powers; but one railway of this class, the first in the following alphabetical list, is inserted because of the peculiar interest attached to it as the first, if not absolutely the first, formed under the powers of an act of parliament, as well as being probably the first upon which locomotive engines were regularly employed. Excepting where otherwise stated, all these lines are worked by locomotive engines.

Branding's Railway, from the name of its constructor and proprietor, and sometimes, from the collieries with which it communicates, the Middleton Railway, and was formed under an act granted to Charles Brading, Esq. and others, persons, in the year 1758. It connects the Middleton collieries, about three miles to the south of Leeds, with that town; and on this road, about the year 1811, he introduced a kind of locomotive engine propelled by Mr. Blekinseed, which was propelled by a horsetail wheel working into a rack-rail. [Railway, vol. xii. p. 248.]

The Great North of England Railway, the York, and the Leeds portion of which was formed under an act of the year 1845, although the company was incorporated in 1843, commences by a junction with the York and North Midland Railway outside the walls of York, the same entrance to which is the only one by which the line enters the north by west in a remarkably straight and level line along the great central valley of the county, passing near Easingwold, Thirsk, and Northallerton, to the Tees at Croft Bridge, whence the route is continued northward and across the Stockton and Darlington Railway.
England, without any gradient of steeper inclination than 1 in 150, a slope which is conveniently surrounded by locomotive engines. A branch line is being formed to Huddersfield, and a railway from Leeds to Bradford has been projected, which, if continued to Halifax, would form a much shorter though less level communication between Leeds and the western portion of the line. By a short junction-line now forming at Manchester, this line will be brought into communication with the Liverpool and Manchester Railway, and communication between Liverpool and Hull, through the York and North Midland, Leeds and Selby, and Holl and Selby railways.

The York and North Midland Railway, which, in common with the preceding line, was laid out by Mr. George Stephenson, enters this county from Derbyshire near Beighton, a few miles south-east of Sheffield, and proceeds northwards to Masham, near Rotherham, where it crosses and communicates with the Leeds and Rotherham Railway. The works proceed northwards by a very winding course to the junction with the Manchester and Leeds Railway at Normanton, and, a little farther on, those of the York and North Midland Railway, near Methley, from which it turns north-west to the more southern line; and thus the tunnel, from this long tunnel at the head of the Don valley, the railway proceeds along the course of that river, first eastward to Penistone, and then south-east from that town to Sheffield. Part of this line towards the Manchester terminus has been opened, and the eastward branch of the tunnel is not yet finished. A branch is proposed from this line to Penistone, by Barnsley, to the North Midland line, which would afford a new route to Leeds, rather shorter than that by the Manchester and Leeds Railway, and would form a better line than the former for goods from Sheffield to Penistone. Emerging from its Sheffield terminus, along the valley of the Sheffield to the North Midland at Chesterfield, which would greatly shorten the distance between Sheffield and the south. An act was passed as early as 1821 for a railway between Derby and Manchester, but nothing has been executed. The Sheffield and Rotherham Railway was projected in 1834, but the act was not passed till 1838, in consequence of the strenuous opposition of some interested parties. It joins the line from Sheffield, which ascends north towards Masham, and Rotherham, communicating with the North Midland Railway, and, by a branch, with the Gresborough collieries. This line, which was opened in 1838, is about 4½ miles long, and the Gresborough branch is about 1½ mile.

The Stockton and Darlington Railway belongs chiefly to the county of Durham [DURHAM, vol. i., p. 206], but, under an act of 1828, the company formed a branch or extension from Stockton, crossing the Tees by a suspension-bridge, and thence through the hills, strengthened from beneath, and proceeding eastward to the shore of the estuary of the Tees in the township of Middleton or Lowerthorpe, where it has been the means of establishing a port of considerable trade, and some industry. The line between Middleton or Middlesbrough and Middlesbrough branch is about 4 miles long, and the Cleveland extension 1½ mile.

The Whitley and Pickering Railway, a line of about 24 miles, worked by horse-power, except on one or two places which the engineer regarded by gravity alone, was formed under an act of 1833 and opened in 1836. From Whitby Harbour the line proceeds south-west for about 6 miles along the valley of the Esk, which it crosses by a bridge of masonry, and then runs northwards through a short tunnel into the romantic vale of Goathland, after which it passes along Newton-dale, nearly in the course of the stream called Pickering Beck, to the town of Pickering. This railway has a single track, and was formed for the small sum of £400 per mile on an average. Besides passengers and goods, the line conveys much mineral produce, especially stone from the quarries of the Whitby Stone Company, which are connected with the line by a short branch near the tunnel. A beautifully illustrated volume, descriptive of this line and the varied scenery through which it passes, was published in 1836.

The York and North Midland Railway, formed under acts passed in 1836 and 1837, and completed in 1840, was originally intended to be a York and Leeds line, but was modified in consequence of the design of the North Midland Railway. It runs northwards within the limits of Yorkshire, passes through the city wall through an archway common to this and the Great North of England Railway, which joins it outside the city, and then proceeds south by west to Sherburn, crossing the river Wharfe by an extensive bridge. At Sherburn a branch of about a mile curves eastward to join the Leeds and Selby Railway, which is now leased, but is about to be purchased by the proprietors of this company, at Milford, 144 miles from York, 131 miles important sunk. It is 2½ miles long, the line proceeds southward under the Leeds and Selby Railway by a bridge, and south of the point of intersection is a second branch curving north-eastward towards Selby.

The line then turns south-west, with some heavy earth-works, and immediately beyond the points of the Leeds and Selby Railway, which actually joins the North Midland Railway by two branches, one of which crosses the Calder and turns towards Leeds, while the other inclines southward, and joins the North Midland at Allofts. The main line, which is remarkably short, is 14 miles, and from this point to Allofts, 117 miles more. Besides forming a link in the line of communication from London to Newcastle and Edinburgh, the southern portion of this line, from Milford to Allofts and Knaresborough, forms part of the new railway connecting Leeds with Hull and the west, and also a better though somewhat longer route between York and Leeds than that by the Leeds and Selby Railway. Branches are proposed to Scarborough, and the Whitley and Pickering Railway, and to the Knaresborough and Harrogate Railway.

Manufactures.—In its industry, as well as in other respects, Yorkshire is an exceedingly varied and interesting portion of the kingdom; and the West Riding forms one of the most important manufacturing districts in England, and a greater variety of manufactures are carried on at Kirkstall, and in some other parts of the West Riding, of which Lewis mentions Wensleydale and Masham. Flax-spinning, as observed by Mr. McCulloch, in his Statistical Account of Yorkshire, pp. 368-369, is carried on to a greater extent at Leeds than anywhere else in England. Extensive iron-works, which formerly enjoyed considerable celebrity, were situated at Rotherham, and there are others in the neighbourhood of Bradford; but, according to the work just quoted, which is the principal authority for this part of the article, the iron-works of Yorkshire, if not actually declining, are making but little progress. Their total produce in 1838 was estimated at about 35,000 tons. For a further notice of these see DURHAM, vol. i., pp. 317, 347, and p. 318. The manufactures of hardware and cutlery at Sheffield, and in the district surrounding that town, are very extensive, and in some departments exceed those of Birmingham. In cutlery particularly, the Sheffield establishment, and it maintains a high reputation in other branches of manufactures, which are noticed under SHEFFIELD, vol. xxvi, pp. 368-369. The manufactures of the North and East Ridings are of comparatively small importance, and are confined, in the principal county, consisting of freestone, limestone, coal, iron, copper, and lead, are most extensively used in the West Riding. At Wickersley, about four miles east of Rotherham, several thousands of granite single-stone millstones are made for the field manufacturers, some of which are sunk to 120 feet in diameter. The coal which occurs in
of the manufacturing prosperity of the district, is found chiefly in the vicinity of Leeds, Sheffield, Bradford, and Wakefield. A small woollen district exists near Morley, the chief of which is concerned with the manufacture of cloth. This district is of a smaller extent than those of Leeds, Bradford, and Wakefield. In the several articles on those towns will be found particulars of the respective branches of which they may be considered the centres, and especially under Leeds, Bradford, and Halifax, the history and statistics of the woollen manufacture are treated at length. 'Cloth is,' observes Mr. M'Culloch, 'the chief article manufactured in this district, the greater part being made in the neighbourhood of Leeds, Wakefield, Huddersfield, and Saddleworth. Leeds, in particular, he processes a grand mart for all white and broadcloth flannel. The former, which are usually called mixed cloths, are made wholly of dyed wool. The mixed-cloth manufacturers reside partly in the villages belonging to the parish of Leeds, but chiefly at Morley, Gildersome, Spring Grove, Huddersfield, Dingley, Ossett, Wakefield, Calverley, Ecclesfield, Idle, Buildon, Yeosum, Guiseley, Rawden, and Horsforth, in or bordering upon the vale of the Aire, principally to the west of Leeds; and at Batley, Dewsbury, Ossett, Horbury, and Gomersal, and west of the valley of the Calder. Very few mixed-cloth manufacturers are to be found to the east and north of Leeds, and are but few in the town itself. White cloth,' according to the same authority, 'is principally manufactured at Ossett, Wakefield, Kirkheaton, Dewsbury, Batley, Birstal, Hopton, Mirfield, Ecclesfield, Cleckheaton, Bowling, and Shipley, a tract of country forming an oblong belt through the vale of the Calder from the vale of the Aire, beginning about a mile south of Huddersfield, leaving all Huddersfield about a mile to the left, terminating at Shipley on the Aire, and not coming within less than six miles of Leeds on the right.' Though generally distinct from each other, the districts of the mixed and white cloth occasionally, as will be seen from the above description, run into each other, especially upon their southern and south-western extremities. Flannels and baizes are the principal articles made about Halifax, and the chief district for blankets and flannel, and flannel and baize, within which district, it is stated, is largely practised at Bradford, where also, as well as at Halifax and Leeds, stuffs are manufactured. In and near Huddersfield are made narrow cloths; and Saddleworth produces kersey and worsted cloths nearly equal in quality to those of the west of England. Wakefield also is chiefly celebrated for its woollen market and the skill of its cloth-dyers. Near Batley and Dewsbury are establishments called shoddy mills, for manufacturing yarn from woolen rags and refuse goods, of which considerable quantities are imported. A little new wool is usually added, and the yarn is made into a coarse kind of cloth which is used for padding and similar purposes. From the nature of its manufactures, consisting of baizes, flannel, kersey, and broadcloths, Rochdale may, though situated in an extensive country considered to belong to the woollen district of Yorkshire.

Though it is difficult to estimate the proportion exactly, M'Culloch conceives that the woollen manufactures of Yorkshire form fully three-fourths of those of the whole kingdom. From the Returns of the Factory Inspectors it appears that there were, in 1834, 1102 woollen factories at work in the whole of England, employing 65,461 persons, while those in the West Riding alone amounted to 261,732 persons. The employment for the year accounted for the great cloth-halls are given under the towns to which they belong, where will be found details as to the mode of conducting the business. Much cloth is however produced and sold without passing through the halls. For a long period until the 18th century, Acts of Parliament were in force, under the name of Stamping Acts, for the purpose of preventing fraud in the measurement of cloth, and from the year 1725 to 1813, annual returns were made of the quantity of cloth milled at the several fulling-mills of the West Riding. In the first of these years the number of pieces of broad-cloth amounted to 261,732, and in 1813, the length of which amounted to 5,515,755 yards. Since the first year for which the returns embrace names, the number of pieces of that kind was 14,485, and in 1813 it had increased to 145,805, the length of which amounted to 50,015,725 yards. Since the period embraced by these returns, the manufacture has continued to increase, with even greater rapidity, as can be ascertained from the increase in the number of factories and the imports of foreign wool.

For a time the manufacture of the woollen cloth produced in Yorkshire consisted of the cosier kind of cloth; but the manufacture has been so greatly improved that Yorkshire clothes are no longer looked upon as inferior to those of other districts, while the fineness of cloth made in the West Riding are excellent. Every branch of the woollen manufacture is at the present (1843) in a state of activity, and in some branches it is difficult to obtain a sufficient supply of hands. Some extensive are the operations of the principal manufacturers, that one house alone, at Halifax, employed between 5000 and 6000 individuals, to whom nearly one-half are engaged in the various branches belonging to the firm, while others perform their work at home, in their own premises.

The extent and prosperity of the manufactures in the West Riding, by opening markets for produce, extends the most beneficial effect upon the agriculture of the district. Agricultural land is not only improved by the manufactures, in an agricultural point of view, but from its extent and the variety of soils and differences of climate which are found there, it is absolutely necessary to force its industries to spread and its manufactures to the north, for the sake of the agricultural industries of the county of Durham. The south-west, while the West Riding and Westmoreland possess the West Riding, the length of the Riding from east to west 30 miles, and from north to south 47 miles; it contains 1,500,000 acres of cultivable land, so that at least or at least was so at the Agricultural Survey of 1843. Part of this has no doubt been brought into cultivation and sand, but there are still extensive moors and mountainous, which are scarcely capable of much improvement.

The soil on the coast is mostly a brownish clay, of a loamy incumbent on a clay or on freestone; and in new valleys west of Whithby the soil is a rich deep loam. The valleys are 30 miles by 15, with 30 miles by 15, and are penetrated by many cultivated valleys more or less fertile. The hills are covered with long grass where the freestone does not crop out and present a bare rocky top. The valleys and meadows have not the same dreary appearance as the country towards the south, where it is brown with ling there are sweet grasses interspersed with it, which are cattle and sheep soon find out. The farmhouses are generally so conveniently situated for the convenience of the cottages, and are often inhabited in villages at a distance from the fields. Where new buildings have been erected on the inclosures of common land, they are better situated, and save the farmer much expense in the carrying home of his crops and in manufacture. In 1818, various Acts of Parliament were in force, under the name of Stamping Acts, for the purpose of preventing fraud in the measurement of cloth, and from the year 1725 to 1813, annual returns were made of the quantity of cloth milled at the several fulling-mills of the West Riding. In the first of these years the number of pieces of broad-cloth amounted to 261,732, and in 1813, the length of which amounted to 5,515,755 yards. Since the first year for which the returns embrace names, the number of pieces of that kind was 14,485, and in 1813 it had increased to 145,805, the length of which amounted to 50,015,725 yards. Since the period embraced by these returns, the manufacture has continued to increase, with even greater rapidity, as can be ascertained from the increase in the number of factories and the imports of foreign wool.
a farm, he expects to find the buildings in good repair, and
engages to keep them so, which condition is not often
strictly adhered to. The cottages for labourers are small
and mean, and generally consist of two small rooms on the
ground floor, which is often damp, and consequently un-
healthy; and the lodgings are bad. The farmer as to his
labourers should be comfortably lodged, and have a certain
extent of garden-ground to raise vegetables for his family.
He will not then be tempted to steal the turnips and
cabbages on the farm. In the North Riding of Yorkshire, as in the
rest of the county, are of every imaginable size, from 50 to
1000 acres and more. It is generally found that farms
from 300 to 500 acres, occupied by intelligent tenants with
much labour, make more profit to the owner than those of
the greatest proportional small. Farms are usually occu-
pied by men who have little more capital than their stock,
even if that is their own, free from debt, and consequently
have not the means, if they had the inclination, to bring
their farms into a high state of cultivation, feeding cattle
and purchasing bones, oil-cakes, and artificial manures, on
which high farming depends. When a farm is too large, it
requires too great a capital, and every portion cannot so
well be attended to by the farmer: we mean those which
are remote from the farms, and which are necessary and in-
valuable to the tenant, such as not to plant above one or
two acres of potatoes, as if on a well-managed farm pots-
apes were not one of the most profitable crops; and their
introduction into the regular rotation on light soils would
be most beneficial. If there must be restrictions, let it be that potatoes shall not recur above
once in eight or ten years on the same spot. The exact
rotation of crops is likewise laid down in some leases, which
entirely precludes any improvement, and takes from the
farmer the advantage, but for us it must remain. The rotation
is, as we think, a consequence of the introduction of
improved rotations of crops.

The most common rotation on heavy loams is, fallow,
weat, beans and peas mixed, oats, which, if the beans
are kept after the fallow, will be profitable and
rotation, but otherwise too exhausting. The hay produced
on the grass land, and given to cattle in winter, may
in some measure give a sufficiency of dung to keep the land
in heart. On the gravelly loams the Norfolk course is
preferable, turnips, barley, leguminous, grain, and
wheat. Sometimes peas take the place of the
clover; they might be profitably introduced between grass
seeds and wheat, as this last does not give so good crops
after ryegrass as after clover; and the introduction of
peas is according to the eight principles of the succession
of crops. A curious alternation is practised by some
on light soil, which is, turnips and barley, the turnips fed off;
and it seems to be a very profitable course. How long it
will succeed we will not pretend to determine; but, as
with wheat and beans on good loams in Kent, with a care-
ful destruction of weeds, it may succeed for many years.
If the turnips continue good, it is a very profitable course.
The only manured used for the turnips is lime: bones would
be the most economical. The manure is spared for the
grazing land, a most preposterous arrangement. In the very rich soils of
Ryedale several crops of oats are often taken in succession with
much success; but, like all very rich soils, they will do so
for a time only, and at the expense of the heart of the land,
and all the future crops for generations to come. It is
literally eating up the capital, which should produce a
good interest for ever. An old and bad course on heavy
land is still occasionally met with in Cleveland, which is
fallow, wheat, oats, and clover left two years: by merely
transposing the two last, or taking oats after the fallow
and wheat after the clover, the same crops would give a greater
return and leave the land clean. Oats after wheat must
not be taken in fallow, or the clover cannot possibly
thrive in foul soils.

There is no part of England where lime is so much used
on the land as in Yorkshire; but however advantageous
this may be on sand-loams, it must evidently be thrown
in too large quantities on the heavy soils, and by
itself, without the aid of dung, it cannot be made
profitable to bear crops, and exhausting it of its natural organic
components. On land which has been long in grass, and where
the soil contains little calcareous matter, lime is extremely
beneficial; but upon the large areas of Cleveland it is
unwise. When dressing of rich dung be given at the same time, it does
more harm than good. Wheat is generally sown in the
first week of October, although some continue to sow it
in open weather till March, as the turnips come off and
have good crops, if the weather is dry. The corn, when not
mown, is reap'd with the sickle generally by women; the men seldom reap but the
tie up the sheaves, one man tying for three women; sometimes a boy makes the bands for him. The sheaves are set up in tens, two sheaves being turned over them as a protection against the wet. It is usually done in the morning, but it must be done in the evening by the last light of the day. This may be advisable; but if the weather is fine, it is much better to let the ears have the advantage of the sun and morning dew; even a few showers will not hurt the corn after it is in the lowest stage. The best wheat is grown in Cleveland, and ryegrass is more abundant than those in Ryedale, where the turnip system is more general, instead of fallows. Much wheat is exported from the ports of the North Riding, chiefly to the manufacturing districts, besides what supplies the local consumption; but, of late years, corn and rye meal were the chief food of the labourers, as well as meslin, that is, wheat and rye sown together, which makes good wholesome bread. On the good light soils as much as six quarters of rye per acre has been grown. The barley of this Riding is not particularly fine, nor the crops large. It seems as if the land was better suited to rye and oats: the reason of this it may be more difficult to explain; it arises probably from the natural texture of the soil, more than from its composition. The quantity of barley sown is usually ten pecks, and the crop averages four quarters per sown acre. Ryedale is remarkable for its fine oats, which are usually sown on the turnip land, or on the grass land when ploughed up. The sort is generally the Friesland oat, and the quantity of seed is then shallowly sown per acre. On some of the best lands they sow as much as eight bushels, which appears enormous, and probably diminishes the crop by weakening the stems, which grow too coarse. The idea is, that on good land, the more seed that is sown, the better and sooner it will be made, which is a necessary consequence. The farmers are particular in getting a change of seed from Holland every four or five years. Oats are sown in March and April, the earlier the better, if the weather permits. Eight quarters per acre is an average crop of good land. The oats are either threshed out soon after harvest, as new oats make the best oat-meal, to which purpose they are chiefly applied. A quarter is supposed to weigh twenty-four stones, and is often sold by weight, instead of measure, at this rate.

The soil is very well suited for seed on the best lands, and the preparation is often by ploughing and burning grass lands, which is sure to secure a crop. The seed is sown in July or August, and the plants thinned out or transplanted in October. Where there is a great breadth of rapeseed, the plants are raised in small beds, and transplanted with the plough. A furrow is made and the plants are placed a foot apart, leaning on the furrow-slice turned over; when the plough returns, it covers the roots, and the plant is fixed; it should be turned so that a woman treads by the side of every plant to fix it; a shower of rain renders this operation superfluous. Rape is usually ripe in July, and threshed out on a cloth in the field, by much shedding of the seed is saved. It should be burnt as soon as it is ripe, the cropings are a kind of festival, like hop-picking in hop countries, and draw together many labourers and more idlers; but the work must be finished rapidly in so precocious a climate, for a wet day would spoil all. If there is much seed, great care must be taken that it do not heat too much in the heap. This inconvenience is avoided where the rape is stacked in the straw for some time before it is threshed; but then it must be very carefully handled in the stacking and carrying, or much seed will be shed and lost. It is in this way that the rape seed is best beaten, as early as possible, a cloth being laid under the part which is beaten. This beats out the seeds; they would otherwise soon be devoured by the birds, which are very fond of them. In carrying rape a cloth is spread over four poles, one at each end, the wine, or pole, as it is called, is beaten on; the cloth is laid on the sand, or other hard ground; there are also light barrows with cloths over them, to carry the sheaves to the wagon or stack. The grass and refuse of the rape is excellent fodder for the cattle in winter; it is therefore waste to burn them in the field, as some do. The crop usually averages the same as wheat; but the price fluctuates greatly. To be a profitable crop, it should not be less than the price of wheat.

Potatoes are grown on grass land near and burnt, or there is a manner of roasting them in trunks or three or four quarters having been first baked with great care in a close oven in spring; but now the usual cultivation of this root on the Northumberland plan is generally adopted, with a very careful preparation and manuring.
by these are raked together, and either stacked at once, or, if there is a large quantity, and the weather is pre-
vailing, they are collected into large heaps, where they are blown slightly before they are removed, to avoid the stink which should be avoided if possible, as some of the bottom of the cock is always more or less damaged by the moisture rising from the ground; besides, being considered safe in these cases, it is often left too deep, and sometimes no sufficient interval of dry weather occurs to allow them to be carried till over, nor is this done where they are to be stacked in good order. The dairy and fattening cattle and sheep are usually sent to the pastures about the 12th of May, till October, when they are removed to the after-
erness; the dairy cattle are fed with lea-shorn sheep, and kept bare all winter—a very practical system, which improves the land and encourages grass. All pastures should be mown once at least in three or four years, to improve the grass and destroy rank

There was once a fair proportion of timber-trees both in the woods and hedge rows of this Riding; but they have been much thinned, and at present the quantity is not worth 20d. or more, which pays well for her resounding in the dairy districts, being useful for butter and and other dairy implements which require a white wood.

The short-haired breed of cattle is the prevailing sort all over Yorkshire, and of this there are some varieties. The names thereof are: (1) the short-corned Leeds, October 10 (cattle); (2) the name of the Tees-water breed, in England are the Holderness breed. They originally came over from Holland, and are very profitable where the pasture is good, but on poorer land they soon degenerate. Oxen are kept in Yorkshire in winter, 15, October 15, November 10, 11, and 12, but the Western Leeds the cattle are smaller, and on the pastures of the West Riding and Westmorland the horned breed is very common. A cross of the two breeds has been praised by some, but it is doubtful if anything can be done in this direction. The Holderness breeds, being close confined, scanty, and giving much milk, although not so rich in cream as some of the smaller breeds. A fine heifer with a calf by her side, or ready to calve, or to be turned out, is a very desirable animal, but there is no such thing as a milk cow in Yorkshire. The dairy cows have a great deal of milk, and sometimes it is not to dry the old milk in prime time before calving, or when they are put up to fatten. Salt pepper given to cows, an ounce or more at a time, after breeding them, is of great importance. They have a strong appetite for milk, which they should at first be milked only once a day, taking some milk in the udder at each milking, and they should only be relieved when the milk seems to accumulate, and might cause infection in the udder.

The breed of horses in Yorkshire is quite coarse, being fed at 30lbs., and even 40lbs. per quarter at three years old, and producing 10lbs. or 11lbs. of wool, but the breed has been much improved by crosses from the Clydesdale breed. The wool and carcass have both been much improved by it. The sheep on the Western Moorlands are horned, with grey faces and legs; and many of them have a black spot on the back of the neck: their fleece is coarse. The breed of horses all over Yorkshire is well known and highly appreciated. In no country are so many valuable horses as in Yorkshire, and they are of the best breeds, and fetch great prices. For carriage-horses, Cleveland horses are in high repute when they have some size and age. In the fields of the Eastern Moorlands and on the coast moors, there are many sable horses, and the larger Yorkshire horse. Large numbers of farmers buy colts and yearlings at 20s. or 30s. per annum, and work them moderately till they are six years old, when they are sold for carriage-horses or sable, by this means they often have all the work done for little or nothing, the improved price paying for the expense of the horse. Mares are used generally for farm work, but they are made to give foals very early. The colts are worked till foaling, and aged about five weeks after the foal is ridden the team or the horse when of sufficient age. They generally drop in May, and are weaned in October, when they can live as the pastures. The practice of making up horses for sale is too well known to need a description. Yorkshire farmers are notorious for their art in hiding defects in horses; but as this is well known, they have generally taken precautions, and have good advice if he is not skilled himself: if he is ignorant and conceited, he will probably be taken in and thus be lost to Yorkshire pigs and horses are celebrated, but it is not in this portion of the county that they are the best. We will notice them in the other Ridings.

The markets and fairs in the North Riding are as follows—Askirgth, Thursday, May 11, first Thursday in June, July 13, September 19, October 16, November 29, and December 26; Bedale, Tuesday, Whitsun Tuesday, July 5 and 6 (cattle), October 10 and 11 (cattle), Tuesday next after Christmas (cattle); Brompton, November 12 (swine and horses); Cayoos, August 23 (cattle and sheep); East Ayton, July 5 and September 25 (cattle); Reton, Tuesday before Whitsun Tuesday, before May 11, September 5, and Tuesday before November 22 (cattle); Guisborough, Tuesday, third Monday and Tuesday after April 11 (cattle), August 20 (cattle), September 19 and 20, and first Monday after November 11 (cattle); Hawes, Tuesday, Whitsun Tuesday and September 28 (cattle); Helmsley Black Moor, Saturday, Saturday before Palm Sunday (cattle), Saturday before Whit-Sunday (cattle), Thursday before Palm Sunday (cattle), Thursday before Palm Sunday (cattle) and Sept. 11 (sheep); Laybourn, Friday and Monday before Whitsun Tuesday, first Mondays in May, October, and December; Malton (New), Tuesday, Saturday, Monday and Saturday before Palm Sunday, Saturday before Whit-Sunday, Saturday before Palm Sunday, Saturday before Whit-Sunday, and September 17, 18, and 19 (cattle); Middleham, Monday, November 6 and 7 (cattle); Northallerton, Wednesday, February 14, May 15, September 5 and 6, October 3 and 4 (cattle), and Swinton, second Wednesday in October (cheese); Pickering, Monday, September 25 and October 15 (cattle), Tuesday before Palm Sunday, Friday next after before May 12, Friday before August 24, Friday next after before November 22; Richmond, Saturday, Saturday first Thursday in July, and September 14 (cattle); Scarborough, Tuesday, Thursday, and Sec. Thursday, Bramley, July 15 (cattle, blue, &c.); Stan- ford Bridge, December 1 (cattle, &c.); Stokesley, Saturday, Saturday before Trinity Sunday (cattle); Thirsk, Monday, Shivere Monday, April 6, August 5, October 19 (cattle), October 20 (sheep), and Tuesday after December 11 (cattle, &c.); Tollerton, August 26 (cattle); Topcliffe, July 17 (cattle), 18 (sheep); Whitby, Saturday, September 6, November 22; Yarm, Thursday, Thursday before April 6, Holy Thursday, August 29., 30, 31 (cattle), and September 20 (sheep).
tricts nearer the sea, although the frost and snow are of more continuance in winter. The sea air tends to keep a more regular temperature, cooling the summer heats, and moderating the cold frosty winds in winter. Chalk forms a principal portion of the substratum of the southern part of the district, and in several places is a bold lofty front to the north of this Riding. It occupied a great portion of the centre of this Riding from the Humble to Flamborough Head.

The soil of the Wolds is a light friable calcareous loam or chalk rubble, which covers the solid mass of chalk. There are fints in the soil, but not of such a size and in such quantities as in other chalk districts in the south. On the banks of the Humble there are above 14,000 acres of wap land, a stiff clay of extraordinary fertility. [Wap land is a proportion of the land in the north of England, often sequestered and managed as a common by the owners of the contiguous land.] The great market for this game is often kept with sow-thistle and other rank weeds, which abound in such soils. No wheat can be expected after such a crop, and a fallow is indispensable. Spring tares are sometimes sown with the beans, in the proportion of half a bushel to three quarters of a bushel of beans. The seeds are usu ally kept by the sieve when threshed. This mixture is good when beans are sown to be cut up green, to give the pig and cattle; a very excellent practice, which ought to be more common on heavy soils. The weeds then are chaff, and have neither to be burnt nor ploughed up. The ground may admirably be prepared for wheat by a bastard fallow, as is generally done.

Rape is extensively grown in Holderness both for feed and for seed; in the former it is generally succeeded by wheat; in the latter, by oats. The time of sowing is about the middle of June; the quantity of seed is about a peck per acre. Rape and cole seed are often sown, but the rape seeds up straight stalks, and a late sowing is better than a good fallow. The best oil is made from the Rape. If rape be sown early, rape seed the same year: cole is a decided biennial. 

Hedon, Patrington, Sunk Island, and other rich wold lands, much cole-seed and rape-seed are raised, the latter, in fact, is almost the support of the population of the Wolds; the latter is the place where the sheep-walks on the Wolds rape is often successfully grown; but it may be doubted if so exhausting a crop be not too much for thin poor lands which have not the temporary richness produced by the roots of grass, and have no ready exit from the Rape. The Rape will be restored by manure from the distance of the first pastures from the homesteads and villages.

Sainfoin has been introduced wherever the inclination is to make a stand, in which it is an invaluable plant. The more actively grown in Holderness the more uniformly in Sussex—Agriculture of, to which we refer. Potatoes are very extensively cultivated in Holderness and Hordenham. The potato grown upon the wold lands are preferred in the large market towns, and are used more extensively to make fresh and dried sown for the potato market. The best have been long known by the names of Red-noose kine, Flat white, Purple kidney, and Cape kidney; the best top and Ox noble are very productive, but better suited to feed cattle with than for the table. They are cultivated to a great extent in Holderness. Buckwheat is advantageously grown in the sandy soils, and it is extensively grown in October; it draws late from the soil, and is an excellent amendment of weeds, which makes it a good preparation for turnips.

In the East Riding the proportion of grass lands in farms is much less than in the other Ridings. The grass pastures have been ploughed up, even on the Wolds, and those only which lie low along the rivers have been left for permanent meadows. The salt-mashes along the sea are very useful, especially to recover horses which have been over-worked; sheep likewise get fat on them after the harvest. The effect of the salt-water has been once recovered from this saltpayrty, they take rapidly.

There is here little timber in this Riding, either in woods or hedges, in this mode of cultivation. The ground is covered by the rich alluvials soils and the tenants and proprietors have generally been wise enough not to plant in hedges or rows. Some plantations have been formed on the Wolds, but they contain little useful timber.

Dry ground and the heavy soils of this district are barren; they were done in Holderness and other flat and low parts of the Riding, by which low and marshy grounds have been rendered fertile. Works have been erected at great expense under the authority of several acts of parliament, from 1727 to the present day. In the district of the Wold there are two levels, the one extending from Escrick to Barnham and containing 2130 acres, and the other from the same point to Wilscumme near Hull, containing 10,000 acres; amounted already to 135,000 acres, the interior which is barely repaired by the improved value of the land drained.
This implies some want of care and economy in the com-
misjioners, and something like jobbing in the contractors.
The drainage of 10,500 acres, called the Herford and Der-
vert drainage, part of which is in the East Ridings, cost
£12,942, or about 4£ per acre only. This pays the prov-
ors 21 per cent. on their outlay. Other less extensive
improvements have been executed, much to the improvement
of the country.

Near the sea-coast, chalk or sea-wood is very extensively
utilised for coaling; and after a storm the farmers' carts may
be seen busily employed at low water to collect it. It is
used in hedges, where it soon ferments, and, as soon as
convenient, is carried on the land; if left to rot, it would
seldom if ever be used. The former it is carried
in the land the better. It is excellent for turnips.
Bone-meal is now extensively used on the lighter soils, and many
manures are annually imported from the Continent into the
west of Hull for this sole purpose.

Cattle have been mentioned before, and

some other breed is found in the East Riding.

They are evidently of Dutch origin, perhaps through Hol-
lands, where they have also been introduced from Holland.

A different breed has been bestowed on the breeding of the

sea-board, and the next finest livestock which are of some and better proportions; whether the quantity of milk
increased, is not quite so sure; but the fatting qualities
are of so much importance in a district where breeding and fatting stock is generally preferred to the

rest of the country.

On the rich pastures the improved Leicester breed of

sheep is found the most profitable; on the Wolds the

Dorsets have been introduced with great success; and

these have been attempted, but, on the whole, the pure

Lincolnshire is the best.

No part of England produces so fine and valuable

wools as the East and North Ridings of Yorkshire. We are

mentioned the Cleveland bays. The introduction of

these into the country, and the land districts have been

sharply at high prices; but for the carriage

they are still preferable the pure Cleveland bays without a cross.

are compact, hardy, and of good courage, and can

have a hard day's work better than the half-bred horses,

the Lincolnshire, which are bred in a few places only.

These have been attempted, and which must be altogether

considered, is that with the large Lincolnshire hairy-legged

or-bears. This is quite incongruous, destroying the very

skin in which the Cleveland bays excel, which is the ab-

sent in the latter. The small figures on the back, the

real family, and the next best love which are but

jet black, shining, and smooth appearance of the skin in

the fetlocks gives them. The agricultural labourers

are well off in general in the East Riding; they often

and with the farmers, and are at work early and late.

If the following are the fair and market days in the

West Riding of England:

The following are the fairs in the East Riding:

Altrincham, Sept. 4; Beverley, Thur., Feb. 26, Holy
Thur., July 5, Nov. 6, Wed. before April 6, or on the 6th,
Wed. before May 13, or on the 13th, Wed. before Sept.
4, or on the 14th, Wed. before Dec. 25; Bransbury-
don, Dec. 13; Bridlington, Mon. bef. Whit-Sunday, Oct. 21;
Telford, Feb. 14, Aug. 2, Sept. 26, Nov. 17 (a market for fat
sheep every alternate Monday); Hornsea, Aug. 12, Dec.
11, Feb. 26; Hudderton, Jan. 7, June 17, Dec. 9, Feb. 26,
Thurs. after July 11, Oct. 2 (a great fair for horses
and cattle); Hull, Oct. 11 (horses); Hummubury, May 6, Oct. 29;
Kiln, Aug. 21, Nov. 12; Little Driffield, Easter-Monday,
Vindemia, Aug. 20, Sept. 19, Oct. 18, Driffield, Mon.
and Tues., Aug. 21, Sept. 19, Oct. 18, Mon. and Tues.,
Jult 17, Aug. 21, Sept. 19, Oct. 18, Thurs., 11th, 12th
of March, 3rd, 8th, 13th, 18th, 23rd, 28th of March,
8, July 18, Dec. 8; Pecklington, March 7 (if leap-year,
March 6), May 8, Aug. 5, Nov. 8 (large fairs for sheep
and cattle); South Cave, Trinity Monday; Stamford
and Grantham, Easter-Monday; Spalding, Trinity
Market); May 14, Sept. 17 (the largest sheep-fairs
in the north of England.

The West Riding of Yorkshire is situated nearly in
the centre of the kingdom, but, from its numerous rivers and
its extensive Canals, the east and west, the

in the east and west, and as it is separated by the river Ouse. The coun-

ties of Nottingham and Derby are on the south, and on the
west are those of Lancashire, Chester, and Westmoreland.
The North Riding forms its northern boundary. It is 56
miles long from east to west, 48 from north to south, and
contains about 4,100,000 acres of land.

In so great an extent the soil and climate naturally
vary. It is in general dry and healthy. The eastern and
northern portions are similar to the Ridings so situated, while the west parts of the moist and hilly nature of the

Atlantic. We give, therefore, a significant account of the

agriculture of the North and East Riding, that we shall

only observe that a great part of the West Riding is in pasture,
the arable land being chiefly found on the

northern and eastern portion, where it is cultivated much
in the same manner as in the

Holland, An Agriculturist, May 17.

ingleston, Novem-

r. Robert Brown of Markle, to which we must refer

for particulars.

As grazing is well understood in this Riding, much cattle
is purchased to be fattened here, but not many are bred; conse-

sequently a much greater variety may be observed in the

stock than in the other Ridings. The manufactures, which

have rapidly sprung up, cause a great demand for

the butcher's meat, as a great encouragement to the grazier.

The grass will naturally fatten an ox in summer, which for-

merly would have been considered as quite ripe for the

butter; but with the addition of turnips and hay in au-

"umn they are made very fat, especially the

linseed cakes, which is sometimes succeeded by oatmeal

and hay for the last 10 days, in order to avoid the flavour

which some very delicate palates detect in beef fed with

oily food. Many hogs are fattened in this Riding, the hams

are cured for the London market, and other

parts are delicately disposed of among the manufacturers, who never

find bacon too fat. This riding was formerly better wooded

than the rest of Yorkshire; but the forests have been de-

severely cut, and cultivated to

satisfy the demand for oak and ash of small size for the

use of the mines and collieries.

Much land in the Riding is fit for little else than planting

firs and larch, and where the

latter wood has thriven considerable profit has been made

by the well managed plantations. You must

lay out on his land, and, having no rent to make up, is

satisfied if his farm feeds him and his family, which it often
does but scantily, after very hard labour, such as a

tenant holding a large farm would disdain to submit to

for particular.

The properties and farms in the West Riding are

generally smaller than in the other Ridings, and there are more

freeholders, which is not so favourable to improvements as if they

were of greater extent, and held on lease under liberal

conditions.

The small figures on the back, the real family, and the next best

love which are but jet black, shining, and smooth appearance of the skin in

the fetlocks gives them. The agricultural labourers

are well off in general in the East Riding; they often

and with the farmers, and are at work early and late.

If the following are the fair and market days in the

West Riding of England:

Alberfeld, last Wednesday in April, last Wednesday
in May, last Wednesday in October, Wednesday after
St. Luke's, October 18; Adwalton, January 26, February
25, last Wednesday in Easter fortnight; Bishop Auckland,
last Thursday after Easter, Whitar-Thursday, and every
Thursday after Michaelmas for horses, cattle, etc.;

Boroughbridge, April 27, July 22, October 23 (horses
and cattle); Barnsley, last Wednesday in February pre-

ceding 28th, if 28th is a Wednesday then the Wednesday
before May 12, October 10; Bawtry, Holy Thursday,
Old Martin's, November 22; Bingley, January 25, August
25, 26, 27; Bradford, March 14, 15, June 28, 29, 30, cattle,
December 23, 24, 25, 26; Bentham, June 24, cattle; Boll
Clapham, St. Matthew, September 21; Doncaster, April
5, August 5, November 26, Monday before Old Candles-

day; Dewsbury, Wednesday before May 12, Wednesday
before October 10; Gargrave, Easter Monday, 10th;
Halifax, June 24; Holmfirth, May 24; Ingleston, November 17;
Keighley, May 8, November 8; Kirkby Stephen; Wharfedale, Wednesday after

Macadam, August 12, Monday after October 10, December
13; Lee or Legarn, August 24, September 17; Legh
July 10, November 8; Oulton, August 1, November
Penistone, Thursday before February 26, March
Tuesday before Old May 49, Thursday
Michaelmas-day; Pontefract, first Saturday
in December, Poodle-2, after that; Halifax,

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Saturday after February 13, first Saturday after September 12, Saturdays before Palm-Sunday, Low-Sunday, and Trinity-Sunday, show of horses, February 5; Ripley, August 25, 26, 27, Thursday after January 24, Thursday after March 21; Ripley, Sunday after Easter-Tuesday, June 22, first Thursday after August 22, November 22; Rotherham, Whit-Monday, December 1; Sedbergh, March 20, October 20; Selby, Easter-Tuesday, June 22, October 10; Settle, Tuesday before Palm-Sunday, Thursday after the Good-Friday, Whit-Sunday, April 26, August 18 to 21, first Tuesday after October 27; Sheffield, Tuesday after Trinity-Sunday, November 28; Skipton, October 6; Slaidburn, February 14, 15, August 1, October 20; Smith, last Friday in April; Thornthwaite, Thursday after the Good-Friday, Tuesday after July 11, same days after October 11; Topcliffe, July 17, 18; Wakefield, July 4 and 5, November 11 and 12 (if on Saturday, Saturday before); Wetherby, Holy Thursday, August 5, November 22; Whitgift, July 12.

Divisions. Yorkshire.—Yorkshire is divided into the East Riding, North Riding, and West Riding. The East Riding is divided into the wapentakes of Buckrose, Dickerose, Harth, Holderness, Howdenshire, and Ouse and Derwen. The North Riding is divided into the wapentakes of Allertonshire, Bridlington, East Riding, Gilling, West Gilling, Hallifield, East West, West Riding, Pickering, Lythe, Ryedale, and the liberties of Langbaurgh and Whitby Strand. The West Riding is divided into the wapentakes of Askrigg, Barkston, Bilsdale, Bridlington, Skyrack, Staithleif and Everwoss, Staincross, Strafford and Tickhill, and the liberty of Ripon. The liberty of St. Peter of York (which comprises 51 places or parts of places in the East Riding, 42 in the North Riding, and 40 in the West Riding) is the liberty of the city of York. The wapentake of Askrigg, Barkston, Bilsdale, Bridlington, Skyrack, Staithleif and Everwoss, Staincross, Strafford and Tickhill, and the liberty of Ripon. The liberty of St. Peter of York (which comprises 51 places or parts of places in the East Riding, 42 in the North Riding, and 40 in the West Riding) is the liberty of the city of York. The wapentake of Askrigg, Barkston, Bilsdale, Bridlington, Skyrack, Staithleif and Everwoss, Staincross, Strafford and Tickhill, and the liberty of Ripon. The liberty of St. Peter of York (which comprises 51 places or parts of places in the East Riding, 42 in the North Riding, and 40 in the West Riding) is the liberty of the city of York. The wapentake of Askrigg, Barkston, Bilsdale, Bridlington, Skyrack, Staithleif and Everwoss, Staincross, Strafford and Tickhill, and the liberty of Ripon.
of it in the gardens of Bedale Hall, a mansion in the neighbouring

The tower of the church, which is very strong, was formerly used for defence by the inhabitants. The population of the township of Bedale was 1269 in 1831, and 1250 in 1841, but the whole parish contained, at those dates respectively, 2707 and 2603 inhabitants. The petty sessions for the division of East Anglia are held at Bedale.

The South, so called to distinguish it from the parish and village of North Cave, which lies a little to the north of it, is a parish and small market-town, partly in the liberty of St. Peter of York, and partly in the Hunley-Beacon division of the wapentake of Harthill, in the East Riding of Yorkshire, six miles west of Great Driffield and about three miles north of the Humber, near the western foot of the Wolds. The parish is extensive, and comprises the townships of South Cave, Broomfleet, and Great Driffield, the latter with a population of 2699 in 1831, and 3233 in 1841, including 69 inmates of the Workhouse, a number of almshouses, and seven monuments, supposed to be the monuments of Danish chieftains who fell in some engagement near the town, but nothing authentic is known concerning them. They are popularly called the ’Danes Graves.’ The chapelry of Little Driffield lies west of Great Driffield, and has a parish church, a chancel, and a modern vestry, all contributed to by the Earl of Harewood. The church is dedicated to the Holy Cross; it has no living, and is a perpetual curacy annexed to the latter. The church, dedicated to St. Peter, was rebuilt in 1807; and there is a Wesleyan chapel. The population of the township of Great Driffield on Sunday, was 92 in the former and 154 in the latter year; and that of the whole parish 2834 and 3477 at the same periods. Great Driffield is a polling-place for the Riding.

Easingwold is a market-town and parish in the wapentake of Bulmer, in the North Riding, about 208 miles from London, 13 miles north by west of York, and 11 miles east by north of Boroughbridge. The parish comprises the parishes of Brompton, Easingwold, and Easington, and is in the archdeaconry of Cleveland and diocese of York, with a gross income of 250l., in the patronage of the bishop of Chester. Easingwold contains places of worship for Roman Catholics, Independents, and Primitive and Wesleyan Methodists, and the former of these stands on an eminence above the town, and commands an extensive view over the antient forest of Galtres and the vale of Mowbray. There are several daily schools, two of which are endowed; a workhouse for the Easingwold Union, with an annual income of 230l.; and a very considerable church bank. It is a place of little importance, and the surrounding districts are not very fertile, but considerable quantities of bacon and butter are sent to York, and forwarded thence to London and elsewhere. The market is held on Tuesdays and Fridays, and there are fairs on the 22nd and 26th of September. Some chalybeate springs rise in the neighbourhood, one of which supplies a small bathing-house. The want of water-communication has been a disadvantage to this town, but 55 miles of railway are supplied by the Great North of England Railway, which runs near it. The population of the township was 1822 in 1831, and 2171 in 1841, including 67 persons in the Union workhouse; that of the whole parish, in the same years, 3090 and 2719 respectively.

Egton is a small market-town and parish in the east division of Langbaurgh Liberty, in the North Riding, about 7 miles west by south of Whitby, on the edge of the Egton Moors. The church, which is dedicated to St. James, is a partly Collegiate church, built in the 14th century, and was consecrated by the Bishop of Durham, in the 15th century, after the civil war between Charles I. and the parliament.

Driffield (Great), is a market-town and parish, situated partly in the liberty of St. Peter of York, but principally in the Binton-Beacon division of the wapentake of Hartill, in the East Riding of Yorkshire, 126 miles north by west of London. The town is pleasantly situated, at the foot of the Wolds, near one of the sources of the river Hull, about 193 miles from London, 26 miles east by north from York, 114 miles south-west of Bridlington, and 17 or 18 miles north by west of Hull. The parish, which contains a small portion of the township of Great Driffield the chapelry of Little Driffield, and the township of Emswell with Kellthorpe, is a discharged vicarage, in the diocese of York, with a gross income of 154l.; and the church, dedicated to All Saints, is an ancient structure, with a Norman tower, and consists of a nave, chancel, and a vestry, with a close of more than a mile on one side, street, with a clear trout-stream, which, below the town, is enlarged into a canal for communication with Hull by the river of the same name. It is lighted with gas, and there is a subscription library. The parish is a member of the Union, and contains a workhouse, a chapel, and a school. It has a market on Tuesday, and a fair on the 9th of August, and the 19th of September. Little Driffield was the burial-place of a celebrated Northumbrian king named Alchfrid or Alfred, who died here in 702; and it has been repeatedly stated that his remains were discovered entire, and re-interred, in 1784; but Baines says that this story is incorrect, the search made at that time being entirely fruitless. (History, Directory, and Gazetteer of the County of York, vol. iii., p. 194.) The neighbourhood also contains several monuments of archbishops who held in some engagement near the town, but nothing authentic is known concerning them. They are popularly called the ’Danes Graves.’ The chapelry of Little Driffield is a parish church, a chancel, and a modern vestry, all contributed to by the Earl of Harewood. The church is dedicated to the Holy Cross; it has no living, and is a perpetual curacy annexed to the former. The church, dedicated to St. Peter, was rebuilt in 1807; and there is a Wesleyan chapel. The population of the township of Great Driffield on Sunday, was 92 in the former and 154 in the latter year; and that of the whole parish 2834 and 3477 at the same periods. Great Driffield is a polling-place for the Riding.
York

The village contains Primitive and Wesleyan Methodist chapels, and several schools. The population of the parish, which is situated in the wapentake of Pickering, in the East Riding, was 975 in 1831, and 1101 in 1841.

Giggleswick, a handsome village, formerly a market-town, is in the West Riding, wapentake of Staincliffe and Eweppe, and township of Giggleswick, is less than a mile north-west from Settle, on the west bank of the river Ripble. The parish church is a large and handsome building, with accommodation for 1000 persons; the living is worth £212 per annum; and the value of an annuity of £60, reckoned upon the archdeaconry of Craven, and the new diocese of Ripon. Giggleswick has a grammar-school, founded by Edward VI., May 20, 1553, by letters patent. The present income is about 1150l. In 1833 there were 77 scholars, who were all educated gratuitously; scholars are admissible from all places. There are three masters, two for the classics and one for mathematics. There are six scholarships at Christ Church, Cambridge, for students from this school. Archdeacon Paley was educated here under his father, who was head master for nearly thirty years. About a mile north-west from the village is a curious cobbled and flowing well. It is sometimes quite dry, and has been observed to rise about twenty inches in five minutes. The flux and reflux is very irregular, and the cause of the phenomenon is unknown. The waters have been conjectured to arise from a small double siphon. The water is clear, cold, and wholesome.

Gibburn, a small market-town in the West Riding, in the wapentake of Staincliffe and Eweppe, and parish of Gibburn, is 22 miles north-east from the coast, and 25 miles south from the town of York. Gibburn is situated near the east bank of the river Ripble. The market is almost if not quite discontinued. There is no trade carried on. The church is supposed to have been built in the reign of Henry VII. The living is a vicarage in the gift of the crown, and of the net annual value of 101l. The population, in 1831, was 607; in 1841 it was 543.

Goole, a township in the parish of Southwark, in the West Riding, wapentake of Osgoldcross, on the western bank of the river, is situated near the junction of the canal for the Don made by Vermuyden, and 10 miles above the junction of the Ouse with the Trent. The township comprises 3020 acres, and in 1821 contained 71 inhabited houses and 450 persons; 226 houses and 1771 persons in 1841; and 388 houses and 2855 persons in 1841, including 390 in barges and other vessels. This rapid increase is to be attributed in the first place to the opening of the canal from Goole to Ferrybridge, by which the valley of the Lea, Halifax, Wakefield, and other parts of the West Riding and of Lancashire are accessible to Goole for shipment; and next, to the establishment of Goole as a binding-port in 1828. Small steam-boats ply on the canal from Goole to Ferrybridge. Vessels arrive from the ports of the Channel, and from the houses, and the Manchester in particular.

With these advantages and its favourable position, Goole promises in time to become a port of considerable importance. It is perfectly safe for vessels drawing from 15 to 17 feet water. The ship-dock is 600 feet long and 20 feet wide, with 16 feet depth of water, and will contain 200 vessels averaging 50 or 60 tons each. The basin or enclosure, which is 250 yards long by 200 wide, with 9 feet depth of water. The custom-house is a neat building. There are warehouses for the binding of goods and merchandise of every description; the wharves for the loading of foreign grain contains 5000 superficial yards of flooring; and there are thirty hands for the reception of timber under bond capable of receiving upwards of 300 loads; besides an extensive range of cellars. The gross duties received at the custom-house in 1842 amounted to £3935 12s. 3d. Export of coal coastwise in 1842 was 158,000 tons; a considerable part of the coal shipped is brought to London. The number of vessels from Goole arriving in the port of London has greatly increased within the last two years. The vessels belonging to Goole, according to the returns of 1842 were 203 and 178 above 50 tons, of the total burthen of 8717 tons; and 178 above 50 tons, of the total burthen of 15,610 tons; besides four steamers, averaging rather more than 50 tons. In 1841 the number of vessels which sailed coastwise from the port was 2553, total 157,719 tons; and there entered the port 3527 vessels, total 191,000 tons. In the same year 33 British, 214 Danish, and 4682 Danish vessels went to Goole from foreign ports; and 38 British and 16 tons, total 4671 tons, sailed for foreign parts. Only two of the vessels entered from or sailed for the colonies. The independent Wesleyans have places of worship. In 1821 the erection of a new church was commenced. In 1823 there were eight daily schools, one of which enjoyed an endowment of 20l. a year.

Guiseborough, Gisborough, or Guisborough, a market and a parish town, is in the West Riding, wapentake of Cleveland, and diocese of York, in the diocesan gross income of 72l.: the church, dedicated to St. Nicholas, was partly rebuilt in 1791. There are also two independent chapels, and places of worship for the Wesleyan Methodists and the Society of Friends. The town contains chiefly of one spacious street, leading east and west, with many good houses; a market-place, erected in 1821, on which is the town-hall, where petty sessions are held twice a week; a free grammar-school, founded in 1651 by the Rev. Robert Fargnoble, and called Jesus School, stands near the market-place. For the education of children, the schools which were established by subscription in 1790, but remodelled in 1821, when school-rooms were built for the education of 100 boys and 100 girls at a nation expense, are well attended. A branch of the Darlington Joint-Stock Bank; and a warehouse for the Guisborough Union, which comprises twenty-seven parishes. The market, which is well attended, is held on Tuesday; and there are several fairs and annual market. Most of the persons engaged in the sale of wool. At Guisborough the first alm-wares in this country were established, during the reign of Elizabeth. These works, which were funded by Sir Thomas Chaloner, have long been discontinued, but the manufacture has been transferred to Whitby.

Harrowgate, in the West Riding and wapentake of Wensleydale, consists of two adjoining villages, High Harrowgate, in the parish of Knaresborough, and Low Harrowgate, in the parish of Panell. The distance from London is 118 miles, 23 miles north-east from Knaresborough, and 20 miles west from York. Harrowgate has become populous within the last century in consequence of the rapidity of its medicinal springs, and is now one of the principal watering-places of the north of England. In 1831, 1715 persons, including 35 in the Union workhouse, and also the work-shops of Dale Common, Hutton Licros, Pinchinghams and Fockeets, making the total population 2210 in 1831 and 2015 in 1841.

Harrogate, in the West Riding and wapentake of Wensleydale, consists of two adjoining villages, High Harrowgate, in the parish of Knaresborough, and Low Harrowgate, in the parish of Panell. The distance from London is 118 miles, 23 miles north-east from Knaresborough, and 20 miles west from York. Harrowgate has become populous within the last century in consequence of the rapidity of its medicinal springs, and is now one of the principal watering-places of the north of England. In 1831, 1715 persons, including 35 in the Union workhouse, and also the work-shops of Dale Common, Hutton Licros, Pinchinghams and Fockeets, making the total population 2210 in 1831 and 2015 in 1841.
The population of High Harrogate, in 1841, was 3372, including 72 persons in Harrogate workhouse; the population in Low Harrogate, including the hamlet of Beckwith and 60 persons in the Harrogate Bath Hospital, was 1413; total 4785.

The mineral springs are of different qualities, sulphurous, chloride, and saline-sulphate. The sulphur well is in Low Harrogate, and is at all times sufficiently abundant. It is only for those on the spot, but to supply the demand for mineral water in the wapentake of Askrigg, Crescent Well, in Low Harrogate, is also a sulphur spring, but of somewhat weaker quality than the sulphur well.

The Cheltenham Water, as it is called, is a saline-sulphate spring. The Old Spa, the Tewit Well, and the New Chloride Well, are all chloride springs at High Harrogate.

Hawes, a market-town and chapel in the parish of Askrigg, wapentake of Hang West, liberty of Richmondshire, and in the Riding of North Riding, is situated on the south bank of the river Ure, at the head of Wensleydale, about 246 miles from London, 50 miles north-west by west of York, and 6 miles west of Askrigg. The houses are generally built of stone, which gives the town a very neat appearance. It is a market-town and chapel, and has a market on Tuesdays and the 28th of September. The neighbouring high lands supply coal and lime, and contain leaf-mines, which are worked, but are not very productive. A chapel of ease in the wapentake of Holderness and liberties of Hedon and St. Peter's, in the East Riding, about 179 miles from London, 5 or 6 miles east of Hull, in the promontory of Holderness. It is a very short distance from the Humber, with which it is connected. The town has a market on Thursdays, and was once a port of considerable importance, it has declined with the growth of Hull, and is now chiefly dependent upon the agriculture of the fertile and highly cultivated district which it is surrounded. A charter was granted to the town by the Crown in 1200, and it subsequently received several others down to the first year of James II. The income of the borough, in 1834, was £5733 5s. 6d., and at that time, although a borough court of sessions was no longer sitting, and the criminal jurisdiction had fallen into disuse, and the monthly adjournment of the quarter-sessions served the purpose of petty sessions. A court for the recovery of small debts is held here for the wapentake of Holderness. The borough sent members to parliament in the 23rd of Edward I., but subsequently ceased to do so until the accession of Edward VI., from which time it continued to return two members until disfranchised by the Reform Act.

The town contains several places of worship, and is a spa town, with a market-place in the centre, and a small town-hall. The Holderness Agricultural Society hold their meetings here, and have a valuable library. The ordinary market is held on Saturdays and Wednesdays at 7 a.m. and is attended by many persons for cattle, and sheep have been held on alternate Mondays between Sproxton and Midsummer; in addition to which there are several considerable fairs. The old creek having been choked up, an artificial canal, suitable for small boats, was formed from near Horden to the Humber, under an Act of 1774; and this has been very useful to the town, which had a population of 1850 in 1831, and 509 in 1841. Newton, near this town, was formerly a small hospital for lepers, founded in the reign of King John, the revenue of which at the dissolution was £15 15s. 10d.

Helmley, or Helmley Black-Moor, a market-town and parish of Bilsdale, in the wapentake of Holderness, is about 218 miles from London, 22 miles north of York, and 6 miles west by south of Kirkby Moorside. It is situated upon a gentle eminence sloping towards the river Rye, and appears to have derived its name from having been a place noted for its saline springs, for there are here a large number of jets, which are known to have fallen into disuse, and have not been restored. The market contains a chapel, a market-place, and is a spa town; the market-day is Monday, but the market has long since almost entirely ceased.
there are two annual fairs; and annual races are held in the neighbourhood. The town has a fine chalybeate spring, and good accommodation for sea-bathing, and is chiefly worthy of notice as a place of considerable resort during the season. In the immediate neighbourhood is the lake called Horse-meere, which covers about 430 acres, contains some picturesque islands, and affords an abundant supply of fine fish. The population of the parish, which is called Horsemere-with-Burton, was 780 in 1831, and 1065 in 1841.

Racecourse, market-town and parish in the wapentake and liberty of Howdenshire, in the East Riding, about 175 miles from London, 30 miles south-east from York, near the north bank of the Ouse, and south of the Hull and Selby Railway. The parish is partly extensive, and partly prismatic; contains 6500 acres of Howden, Asselby, Balkholme, Belby, Cotness, Kilpin, Kniellington, Metham, Skelton, Thorpe, Yorkfleet, and the chapelties of Barmby-on-the-Mash and Lexton, having an aggregate population of 4531 in 1851, and 5508 in 1841; the town is tolerably well-built. The parish church, which was rebuilt in 1805, is spacious and handsome, with an octagon tower containing eight fine-toned bells and a clock of bronze workmanship by Paine, of Westfield; the church has a powerful organ. The lord of the manor is the Duke of the house of Devonshire, and the rector is the Rev. Richard B. Hanson, descendant of the Keighley Union workhouse in 1841 contained 6 persons. The population of the town of Keighley in 1831 was 2925; in the population in 1841 was 13,738; in 1851 it was 11,176.

Keighley, a market-town, and parish, in the wapentake of Keighley, in the West Riding, in the wapentake of Stainleth and Exonume, and parish of Keighley, 206 miles north-north-west from London, and 38 miles south by east from York. The town stands in a deep valley, at the junction of two east streams which fall into the river Aire about three-quarters of a mile to the north-east, and about a quarter of a mile farther to the north-east is the Leeds and Liverpool Canal. The houses are well built, in some places tolerably well-built. The parish church, which was rebuilt in 1815, is spacious and handsome, with an octagon tower containing eight fine-toned bells and a clock of bronze workmanship by Paine, of Westfield; the church has a powerful organ. The lord of the manor is the Duke of the house of Devonshire, and the rector is the Rev. Richard B. Hanson, descendant of the Keighley Union workhouse in 1841 contained 6 persons. The population of the town of Keighley in 1831 was 2925; in the population in 1841 was 13,738; in 1851 it was 11,176.

Kirby-Moorside, or Kirby-Moorside, is a market-town in the wapentake of Ryedale, in the East Riding, about 224 miles from London, 23 miles north-east from York, 6 miles east by north of Helmsley, and 5 miles west by north of Pickering. It is a small and regular market-town, supposed to have been situated in the antient market-place, and was surrounded by deep hills. The parish is extensive, comprising the townships of Kirby-Moorside, Brandale and mixed with Green, with an aggregate population of 2244 in 1851, and 2258 in 1841. The town is a living of vicarage, and with the curacies of Cockan and Gillimoor, in the archdeaconry of Ouse, and diocese of York, with a gross income of £61. In this church there are three branches. The branch belongs to the Wesleyans, and Society of Friends. The town has three day and Sunday schools, and three branch banks; the town has a market on Wednesday and on Whit-Sunday and on Whitsunday, and the town has a weekly fair in the market-place, and in the market much salt and some linen goods made. The manor formerly belonged to the Earl of Westmoreland, who forfeited it to the crown in the reign of Elizabeth. The Duke of Buckingham, the Earl of Burlington, and the Duke of Bolsover, sit in the county court of the manor. The manor is held by lease and in the town much salt and some linen goods made. The manor formerly belonged to the Earl of Westmoreland, who forfeited it to the crown in the reign of Elizabeth. The Duke of Buckingham, the Earl of Burlington, and the Duke of Bolsover, sit in the county court of the manor. The manor is held by lease and in the town much salt and some linen goods made. The manor formerly belonged to the Earl of Westmoreland, who forfeited it to the crown in the reign of Elizabeth. The Duke of Buckingham, the Earl of Burlington, and the Duke of Bolsover, sit in the county court of the manor. The manor is held by lease and in the town much salt and some linen goods made. The manor formerly belonged to the Earl of Westmoreland, who forfeited it to the crown in the reign of Elizabeth. The Duke of Buckingham, the Earl of Burlington, and the Duke of Bolsover, sit in the county court of the manor.
of the net annual value of 393l. There is also a chapel belonging to the established church which has sittings for 200. The Methodists, Independents, and Roman Catholies had a chapel of worship, with sittings for about 800.  

In 1833 there were 16 days schools in Knarborough, one of which, containing 30 scholars of both sexes, was supported by endowment. There were also 3 day and boarding schools, 1 day and Sunday national school, and 8 evening schools, one of which was supported by the established church.

The chief manufacture is linen, which has long been established at Knarborough, and a large capital is invested in mills, machinery, and warehouses. The River Nidd flows through the transepted church, and considerable use is made at present, and which might be applied to a much greater extent if the increase of trade should require it.

Knarborough has returned two members to parliament since May, 1855. The right of election was originally in 84 burgage tenements, which were nearly all purchased by the earl of Burlington, and the duke of Devonshire was the possessor of them at the time of the Reform Act, under which Knarborough still returns two members. The parliamentary borough comprises the township of Knarborough and part of the township of Scriven-cum-Tenterdale.  
The population of the borough in 1841 was 5382. The number of electors on the register in 1835-6 was 262; and the number was 240, of whom 236 were 10l. householders.

The population of the town of Knarborough in 1821 was 5283; in 1831 it was 5290; in 1841 it was 4678 (2282 males, and 2440 females), including 57 persons in Knarborough and the adjoining places, and 12134 inhabitants.

About half a mile down the river are the ruins of a priory for friars of the order of the Holy Trinity, which was founded by Richard Plantagenet, brother of Henry III. There are some curious dwellings excavated in the rock, and near St. Robert's Church, which is said to have been formed in the thirteenth century by a hermit, son of the mayor of York, and St. Robert's Cave, which is supposed to have been his residence. This cave has been made notorious by the singular circumstances of the murder committed in it by a number of persons, till 1776.

On the north-west bank of the river, opposite the ruins of the castle, is a curious petrifying spring, called the Dopping Well. According to tradition Mother Shipton was born near this well. An extraordinary native of Knarborough, John Metcalfe, called Blind Jack of Knarborough, died there in 1810, at the age of 93. He lost his sight at the age of four years, and in different parts of his life acquired a reputation as a musician, a carrier, a guide, and a clog-dancer.

There are some medicinal springs in the neighbourhood of Knarborough, which were once much resorted to, but they have since been almost deserted for those of Harrogate and Scarborough.

Knyveton, town of Leyburn-Lounds, is a small market-town in the parish of Wensley, wapentake of Hang West, liberty of Richmondshire, and the North Riding of the county, about 220 miles from London, 36 miles north-west from York, 3 miles north of Middleham, and 8 miles south of Richmond. It consists chiefly of a spacious oblong square of well-built houses, in the centre of which a market is held every Friday, where a considerable quantity of corn is sold. It has also fairs on the second Friday in February, May, October, and December, when many cattle and 2400 sheep are sold. It is pleasantly situated in a picturesque scenery, and has places of worship for Independents, Wesleyan Methodists, and Roman Catholics, several schools, a branch bank, and a public library. The town contains one inn and three public houses, and has supply less than 1000 people.

In the neighbour of Leyburn are the remains of Bolton and Middleham castles, and of the abbey of Jervaux and Coverham, and the mansion and pleasure-grounds of Bolton Hall. The population of the township was 1003 in 1831, and 914 in 1841, including 26 persons in Leyburn Union workhouse.

Malton, New, is a parliamentary borough and market-town in the wapentake of Ryedale, in the North Riding, about 214 miles from London, 17 or 18 miles north-east of York, and 3 miles north of the town of Scarborough. It is situated on the north bank of the river Derwent, over which is a stone bridge to connect it with the suburb of Norton, and which here forms the boundary between the North and East Ridings. The borough comprises and is co-extensive with the parishes of St. Leonard and St. Michael, but for parliamentary purposes it unites with the adjoining parish of Old Malton, and is returned by the vote of two members. Both of the parishes of New Malton, with that of Old Malton, form a perpetual curacy, in the archdeaconry of Cleveland and diocese of York, with a gross income of £150. The parson of St. Michael is supposed to have been originally chapels to Old Malton, which is presumed to have been the mother parish and church; and the former has a tall spire, the upper part of which has been left unfinished, in the form of a tower. According to the popular story, its weight should prove too great for the edifice. The town also contains places of worship for Roman Catholics, Presbyterians, Independents, Baptists, Primitive Methodists, members of the Society of Friends, and Unitarians; for schools, there is a grammar school, a national school, a spacious workhouse for the Malton Poor-Law Union, which comprehends 68 parishes; a large marketplace, including a town-hall; a neat theatre, built in 1814; and a handsome suite of public rooms, in connection with which are a newspaper and a subscription library. There were formerly two market-crosses, both of which are destroyed. The town is generally well built, and is favourably situated on an eminence; and it has a brisk trade, of which it is greatly aided by its being well supplied with trade, having been made navigable to Malton, under an Act of the reign of Queen Anne, and more recently to a higher point. The principal articles of trade are corn, bacon, butter, and other agricultural produce, which are sent to several of the markets in the district. The town has a market-place, where New Malton, and 4021 in 1841; that of Old Malton, at the same dates, 1204 and 1206 respectively.

Old Malton stands about a mile north-east of New Malton, on the same side of the river, and it has a very antient church, dedicated to St. Peter, which, with the vicarage, remains of a priory, founded in 1150, for Gilbertine canons, the revenues of which amounted, at the dissolution, to 275l. 7s. It has a free grammar-school was founded here in 1547, by Robert Holgate, archbishop of York, with an endowment which now produces about 100l. per annum. The town contains a Wesleyan chapel and some daily schools. It is observed in the Report of the Boundary Commissioners, that the presumption of some closer connection than that of mere vico age existing, between New Malton and Old Malton, both by the Report of a Committee of the House of Commons in 1659, deciding that Old Malton had a joint right with New Malton in the election of members of parliament, and by the return of two members, the inhabitants of New Malton, over whose commons and wastes belonging to Old Malton. The town is fortified with its lime-quarries.
tract of impassable marsh between the river Derwent and the Wolds. Numerous Roman coins, urns, and the remains of a cairn have been found here. In the Saxen times Malton became a royal villa to King Edwin; and after the Normans conquest the baronial family of Vesey, or De Vesey, built the old Wapentake of Richmond west as the property mentioned above. This castle was demolished by Henry II., but while it stood the town was burnt down by Archbishop Thurstan, who besieged it for the purpose of dislodging a party of Scots who had obtained possession and garrisoned the town. The old town was rebuilt on the site of St. Mary's, and the church was dedicated to Our Lady of the same name and was the church of St. Mary the Virgin. The wapentake of Malton, with a large part of that name, was decided by St. Mary's, and then received the name of New Malton. A noble castellated mansion was erected on the site of the ancient castle, about the close of the sixteenth century, by Ralph, Lord Eure; but in 1674, as his grand-daughters could not agree concerning the property, the greater part of the mansion was pulled down by the sheriff, under an order of court, divided the materials between the contending parties, leaving only the lodge and gateway standing as a monument of their folly. About a quarter of an annum from New Malton is a mineral spring, said to be similar to those of Scarborough, and to be an efficacious chalybeate.

Masam is a parish and market-town, partly in the liberties of St. Peter's, York, and partly in Wapentake of Hang-East, in the North Riding, about 216 miles from London, 30 miles north-west of York, and 14 miles south by east of Richmond, pleasantly situated on the western bank of the Ure. In a very fertile country, nearly level, to the north of the West Riding. The parish comprises the manors of Marsham, Burton-unpon-Yore, Ellington, Ellington, Fearby, Healy-with-Sutton, Itton-with-Pott, and Swinton-with-Wathermark, and had an aggregate population of 2995 in 1831, and 2974 in 1841. The living is a perpetual curacy, valued at £36 per annum, from the benefaction of three other persons. The town is well built, and has a considerable manufacture of woollen yarn, and a flax-mill, which in 1838 employed 122 persons. Coarse straw-plait for making hats is also produced. The town has a weekly market, a little importance, on Wednesday, and fairs on the 17th, 18th, and 19th of September. The population of the township of Marsham alone was 1276 in 1841, and 1316 in 1841.

Middleborough, or Middleburgh, is a parish and township, is chiefly in the western division of Langbaurgh liberty, in the North Riding, situated on the southern shore of the Tees, close to its mouth, and which has risen to considerable importance in consequence of the formation of a branch or extension of the Stockton and Darlington Railway for shipping coals here, so as to avoid the river navigation. Middleborough lies about 5 miles east by north of Stockton, and formerly had a chapel dedicated to St. Hilda, which is now in ruins, but of which no remains are extant. It has been found here is some burying-ground. The parish of Middleborough contains the township of that name and the township of Linthorpe, and had a gross population of 236 in 1821, 383 in 1831, which is increased by the addition of the railway station, 575 in 1841, including 40 persons in barracks and tents, but exclusive of 109 persons absent from home, and 50 who had emigrated to America in that year. The township of Middleborough alone contained only 40 persons in 1821, 54 in 1831, and 66 in 1841, and the gross population was 5118 in 1831, and 2273 in 1841. The living is a vicarage, with the advowson of the Skell and Drighlington, formerly in the peculiar jurisdiction and patronage of the dean and chapter of Durham. The parish is peculiarly strongly connected with the Stockton and Darlington Railway, and the river Tees, which forms one side of the boundary of the electoral district. The parish comprises the borough and township of Middleborough, the township of Carnaby, the chapelry of the church of St. Peter's, and some foundries, a pottery, and other manufactures. The living is a perpetual curacy, in the archdeaconry of Cleveland and diocese of York, the gross income of which in 1831, was 337. The township contains Independent and Wesleyan Methodist chapels, and several schools.

Middleham is a parish and small market-town in the wapentake of Haug-West, liberty of Richmondshire, and North Riding of the county, about 226 miles from London, 41 miles north-west of York, and two or three miles west of Leyburn. The living is a perpetual curacy, with the vicarage of the Skell and Drighlington, formerly in the peculiar jurisdiction and patronage of the dean and chapter of Durham. The living is a vicarage, with the advowson of the Skell and Drighlington, formerly in the peculiar jurisdiction and patronage of the dean and chapter of Durham. The parish is peculiarly strongly connected with the Stockton and Darlington Railway, and the river Tees, which forms one side of the boundary of the electoral district. The parish comprises the borough and township of Middleborough, the township of Carnaby, the chapelry of the church of St. Peter's, and some foundries, a pottery, and other manufactures. The living is a perpetual curacy, in the archdeaconry of Cleveland and diocese of York, the gross income of which in 1831, was 337. The township contains Independent and Wesleyan Methodist chapels, and several schools.
and Wesleyan Methodists, and numerous daily and Sunday schools, three of the former of which are partially supported by endowments, and one, now the parochial school, was formerly a grammar-school, of royal foundation, though at what date is uncertain, and where several piles or portions were met. There was antiently a hospital dedicated to St. James, and founded by Hugh Pudsey, bishop of Durham, the clear revenue of which, at the time of the dissolution, was 56l. 2r. 2d, and of the site of which some indications yet exist near the town. The church house is several merlons, or White Friars, dedicated to St. Mary, and there is some land here in the reign of Edward III, for the purpose of building a house and church. The town now contains an hospital, or Maison Dieu, founded in 1476 by Sir Hugh Dalmer and Dr. John Lumby, who conveyed East Riding, and rebuilt by the inhabitants, but for a smaller number. Northallerton is lighter with gas, and has a handsome modern sessions-house, to which is attached a House of Correction. Not being a corporate town, it has no municipal police, but it is yet the residence of the Bishop of the county magistrates. It has a Court of Requests for the whole of the manor of Allerton and Allertonshire, comprising 32 townships; and the quarter-sessions for the North Riding are held here. It likewise contains the Reformatory School, founded by Bishop Nidd, appears to be in a state of rapid improvement.

According to Baines 'Religious State of the Manufacturing Districts,' 1843, there are in the township seven episcopal churches and a considerable number of dissenting societies, in all twenty-five places of public worship, with sittings for 5700 persons: there are four infant schools, 12 private schools, three factory schools, and seven public day-schools, in all twenty-six day-schools, bank schools, and schools supported by the established church, and fifteen supported by different classes of dissenters, in all eighteen Sunday-schools, with 1060 scholars. The present population, according to Baines, is 7996. There are several iron mines in the neighborhood, but the prosperity of the town seems to be chiefly derived.

Patrixton is a parish and market-town in the southern division of the wapentake of Holderness, in the East Riding, about 188 miles from London, 57 miles south-east of York, and 18 miles north-west of Holderness. It is a pleasant place for antiquities, and is supposed by some writers to be the Praetorian of the ancient geographers, an opinion somewhat strengthened by the discovery, about eighty years since, of part of a Roman altar. Other writers derive the name of the town from St. Patrick, a missionary consecrated by the bishop of York, in 440, and of the parish was 1288 in 1831, and 1402, including 72 inmates of the Union workhouse and 16 persons in barges, in 1841.

Penistone, a small market-town on the right bank of the Don, in the West Riding, wapentake of St. persons in barges, 18 miles from London, on the road from Sheffield to Huddersfield, 13 miles from each place. It is situated on the edge of the dreary moors which form the borders of York-

shire and Lancashire. The climate is cold, and the harvest is sometimes not gathered in before November. The parish comprises 21,509 acres, and consists of the chapelry of Denby, and the townships of Gunthwaite, Humbel, Ingibirthworth, Langsett, Oxapring, Penistone, and Thuerdgate. The population of the parish was 502 in 1821, 5201 in 1831, and 5907 in 1841. The church is dedicated to Penistone, and the townships of Denby, Gunthwaite, and Highburgh-worth: the living is a perpetual curacy, net value 147. The linen manufacture is carried on in the town, and there are 143 schools, and 1634 scholars; besides two or three tolerably large schools.

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sclars. The population of the township was 645 in 1821, 703 in 1831, and 738 in 1841. The population of Thurlstone in 1841 was 1872. The Sheffield and Manchester line, with a depot station in the town, and the Rotherham line, includes 225 persons who were employed on its construction. Dr. Sanderson, the blind mathematician, was a native of the parish.

Pickering is a parish and market-town in the wapentake of Pickering-Lytham, in the North Riding, about 226 miles from London, 26 miles north-east of York, and 18 miles west of Scarborough, pleasantly situated on a small eminence, at the foot of which runs the rivulet called Pickering Beck. The parish comprises the townships of Pickering, Kirkleatham, Mantishoe, and Newton, and the chapelry of Goathland or Goatland, and had an aggregate population of 3346 in 1831, and 3901 in 1841. The living is a discharged vicarage, with the curacy of Newton, a peculiar of the dean of York, with a gross income of £145. The town is connected with the meeting of Pickering by a main road described in a previous column, and is long and straggling; and it contains an antient and spacious church, with a lofty spire, dedicated to St. Peter; several dissenting places of worship, and several schools, one of which is endowed. Various other places of amusement, like the various lairs are situated and connected with the town. Pickering was 2555 in 1831, and in 1841, 2992, including 50 inmates of the Union workhouse and 11 persons in tenements.

Pickering is a parish and market-town, partly in the liberty of St. Peter of York, but chiefly in the Wilton-Beacon division of the wapentake of Harthill, in the East Riding, about 195 miles from London, 13 miles east by south from York, and 7 miles north-west of Market Weighton. The town is situated on the level country, two miles from the western edge of the Wolds, and is connected with the river Derwent by the Picklington Canal, which is described elsewhere. The parish contains the townships of Picklington, Meltonby, and Owathorpe, and the chapelry of Yapham, and had an aggregate population of 2255 in 1831, and 2562 in 1841. The living is a discharged vicarage, with the curacy of Yapham-cum-Meltonby, a peculiar of the dean of York, with an income of £137. The parish church, dedicated to All Saints, is a very remarkable building, containing several places of worship for Roman Catholics, Independents, and Primitive and Wesleyan Methodists; a well-endowed free grammar-school, founded in the 6th year of Henry VIII., by John Dowman, LL.D., with which are connected five exhibitions at St. John's College, Cambridge, which has an income exceeding 1000l. per annum; and among several other daily schools, a national school, liberally supported by subscriptions. The buildings of the grammar school were re-erected in 1819. Pickington is one of the polling-places for the township of Pickering, the centre of a Poor-Law Union comprising 47 parishes; it has three branch banks, and petty sessions for the Wilton-Beacon division are held here. It has a market on Saturday, and large sheep and cattle fairs are held on March 7 (or the nearest Monday), May 8, August 1, and November 9. At Barnsley Field, near the town, four human skeletons, with an urn bearing some antient characters, were discovered in 1763. The population of the township of Pickington was 3341 in 1831, and 3925 in 1841.

Reeth is a small market-town in that part of the parish of Grinton which belongs to the wapentake of Gilling-West, in the liberty of Richmondshire and the North Riding, about 230 miles from London, 46 miles north-west from York, and 10 miles west by south from Richmond, on the northern bank of the Swale, about half a mile above the junction of the Arkle. The town is irregularly built in a highly picturesque situation, and it contains independent and Wesleyan schools, a grammar-school, two national schools, one endowed in 1643, by Alderman Richardson, of York, and the other in 1814 and 1815, by the members of the Society of Friends, the schoolrooms of the latter being also used as a place of worship by persons of the founders' persuasion. The town has a very particular manufacture of knitted stockings, many of which are exported; and many of the inhabitants receive employment from lead-mines in the neighbourhood, the produce of which is of great purity, and is sought after for the manufacture of hats, and for the making of snuff. The lead mines produced a few years since about 5000 or 6000 tons of lead annually. There is a branch of the Swaledale and Westmoreland Banking Company in the town, which has a market on Friday, under a charter of the 8th year of Ktvem and Mary, and several fairs, the days of which are variously given by different authorities. Near the town are the remains of an entrenchment, called Maiden's Castle, about 100 yards square, and of some others, one of which is much larger; and from some remains which have been discovered here there is reason to believe that the town was once inhabited by the Romans. Near the town, in the hamlet of Healaugh, are the remains of a house said to have been inhabited by John of Gisburne, one of the robbers of the diocese of Chester, but now in the architecture of the diocese of York. The town was situated on the north side of the river Nidd. The town is antient, and contains some curious old monuments and remains of the Irton church, which was the site of the diocese of Chester, but now in the architecture of the diocese of York and diocese of Ripon, in the gift of the Ingilby family, and of the net annual value of £662. The chief distance of the place is the castle of the family of Ingilby, which is now a ruin, but had been once built. There is a grammar school, which in 1833 contained 40 male, which were built and endowed in 1702, by two young daughters of Sir William Ingilby. The population of the township in 1831 was 270; the population of the town is not given in the Population Returns for 1841.

Saddlesworth is a village in the West Riding, in the wapentake of Agbrigg and parish of Rochdale, 18 miles north-west from London and 54 miles south-west from the city of York. The town is situated in a fertile vale belonging to a district in which the woollen and cotton manufactures have advanced with amazing rapidity and to a very great extent. The district is 7 miles long and 3 miles wide, and includes about 100 manufactories, and has an aggregate population of 18,970. The population in 1811 was 12,579; in 1821 it was 13,982, in 1831 it was 15,986, in 1841 it was 16,829, at which time there were 553 houses unincorporated, owing to the depopulation state of the manufactures.

Sedgebergh is a small market-town in the West Riding, in the wapentake of Staintain and Ewcrross, 256 miles north-west from London, and 7 miles north-west from York. The town is situated in a sheltered and fertile vale among rugged mountains, and is the chief town of the parish of Sedgebergh, in the diocese of Chester, but now in the archdeaconry of Richmond and diocese of Ripon, in the gift of Trinity College, Cambridge, and of the net annual value of £664. The parishes are places of worship belonging to the Methodist Connexion and Independents. The daily schools at Sedgebergh, one of which is a grammar-school, and had 100 scholars. The school was founded by Dr. Roger Lipton, provost of Eton, in the reign of Edward VI. After some time the funds were misapplied, but restored 1618, and Norden, a fellow of King's College, Cambridge, and Sir Arthur Denny, who also rebuilt the school. The endowed amount to about 500l. a year, paid to the head master but out of which he pays 100l. a year to the second master besides other expenses. The head master is paid 100l. a year, and fellowships of £20 and £10 in the college, Cambridge, and two fellowships for poor students in the school. There are manufactures of cotton and silk. The town is not sufficient for the supply of the town is obtained from the mine about two miles distant. The population of 500
Selby, a market-town in the West Riding, in the wapentake of Staincliffe and Ewecros, and parish of Selby, 127 miles north-west from London, and 14 miles south by east from York; it is situated on the west bank of the river Ouse, which is navigable to Selby for vessels of about 200 tons burthen. An excellent timber bridge crosses the river, below the town. It was formerly a strong and well-built, paved, and lighted. The town-hall, a neat brick edifice, was built in 1823. There is a fine old Gothic market-cross. The church, dedicated to St. Mary and St. Germain, is part of an abbey of Benedictine monks, which was founded by William the Conqueror, and was in the possession of this family, and was a splendid establishment till the dissolution by Henry VIII. Henry I. was born at Selby in 1068. The church is a spacious structure, and contains some curious old monuments. The architecture is of different periods, some of it very beautiful; in 1819 it was 203 feet long. The tower fell down in 1800, and was rebuilt in its present form about 1763. The living is a perpetual curacy, in the gift of the Hon. E. R. Petre, with an average net income of £135. 2s. 8d., and is invested in the Westminster, Union, and other charities. Steam-packetts ply between Selby and Hull, and a canal from Selby joins the Aire and Calder navigation, and thus communicates with Leeds. There is also a railway between Selby and York, and Hull. Selby railway joins the Selby and Leeds railway a little to the west of Selby, and thus makes a railway communication between Leeds and Hull. There is a branch custom-house at Selby, by which vessels can proceed direct to the port of London.

In 1833 there were ten daily schools, of which one was a grammar-school with an endowment of 53l. 17s. 10d. a year, to which upwards of 60l. is added annually by donations and subscriptions. The population in 1841 was 5376, of whom 275 persons were washed in baphe and 89 in the Selby Union workhouse. In 1821 the population was 4097, and in 1831 it was 4000.

Skipton, a small market-town, in the West Riding, in the wapentake of Barkston-Ash and parish of Sherburn, is 133 miles north by west from London, and 16 miles south-east from York. The town is situated on a small river, and is a market and manufacturing town. There are seven daily schools. The Commissary of Education at York formerly had here; it is a spacious structure, and the house is described as exhibiting a peculiar and magnificent system of architecture. The living is a vicarage, in the patronage of John Smith, of Staincliffe, Esq. The value of the entire gross soil is £15 a year. The population in 1841 was 5900; 8350 in 1831, and 10,444 in 1841. There is a market and a grain market, and also a fair by the annual value of £750. The Wesleyan Methodists have a chapel here, with a Sunday-school attached, which in 1833 was attended by 171 children. There is a national school, partly supported by a small endowment, the date of which is unknown; also almshouses for six poor persons founded by the Yorke family, and others for six widows, rebuilt in 1802 by Lord Downes, who has a seat in the parish. The parish of Smith is very extensive, and extends into the wapentake of Barkston-Ash. It comprises the chapelry of Arnside (a perpetual curacy, net value 51l. 13s. 4d.), with that of Hook (a perpetual curacy, net value 56l.), population 1821; the chapter of Rawcliffe (a perpetual curacy, net value 120l.), population 1821; and the chapelry of Hook (a perpetual curacy, net value 56l.), population 1821; the chapter of Rawcliffe (a perpetual curacy, net value 120l.), population 1821; and the townships of Balne, Cowick, Goole, Gowdall, Hook, Hensall, Holmville, and others for six widows, rebuilt in 1802 by Lord Downes, who has a seat in the parish. The parish of Smith is very extensive, and extends into the wapentake of Barkston-Ash. It comprises the chapelry of Arnside (a perpetual curacy, net value 51l. 13s. 4d.), with that of Hook (a perpetual curacy, net value 56l.), population 1821; the chapter of Rawcliffe (a perpetual curacy, net value 120l.), population 1821; and the townships of Balne, Cowick, Goole, Gowdall, Hook, Hensall, Holmville, and others for six widows, rebuilt in 1802 by Lord Downes, who has a seat in the parish. The parish of Smith is very extensive, and extends into the wapentake of Barkston-Ash. It comprises the chapelry of Arnside (a perpetual curacy, net value 51l. 13s. 4d.), with that of Hook (a perpetual curacy, net value 56l.), population 1821; the chapter of Rawcliffe (a perpetual curacy, net value 120l.), population 1821; and the townships of Balne, Cowick, Goole, Gowdall, Hook, Hensall, Holmville, and others for six widows, rebuilt in 1802 by Lord Downes, who has a seat in the parish. The parish of Smith is very extensive, and extends into the wapentake of Barkston-Ash. It comprises the chapelry of Arnside (a perpetual curacy, net value 51l. 13s. 4d.), with that of Hook (a perpetual curacy, net value 56l.), population 1821; the chapter of Rawcliffe (a perpetual curacy, net value 120l.), population 1821; and the townships of Balne, Cowick, Goole, Gowdall, Hook, Hensall, Holmville, and others for six widows, rebuilt in 1802 by Lord Downes, who has a seat in the parish.
six miles, the Cleveland hills, including the mountain called Roseberry Topping, rise in the form of a semicircular amphitheatre, of which Stokesley is the centre. The parish comprises the townships of Stokesley, Great and Little Busby, Easby, and Newby, and had an aggregate population of 2376 in 1831, and 2734 in 1841, including the non-residents mentioned below. The living is a rectory

of the deanery of Cleveland and diocese of York, and in the patronage of the archbishop of York, with a gross income of 13252.

The parish church, there are places of worship for Independents and Primitive and Wesleyan Methodists. Among Garnish schools are national schools for both sexes, partly supported by endowment. The town consists chiefly of one street, with many well-built houses, and it has an annual court-leet and weekly petty sessions. It has a considerable manufacture of linens, a good market on Saturday, and a fair on the Saturday before Easter Sunday, Trinity Sunday, and Old Lammas-day. Stokesley is a polling-place for the North Riding, and the township had a population of 1967 in 1831, and 2310 in 1841, including the hamlet of Tanton, 16 persons in the Union workhouse, 24 in farms, and 270 visitors on the annual fair.

Tadcaster, a market-town in the West Riding, partly in the wapentake of Barkstone-Ash and partly in the Ainsty of York, 155 miles north-north-west from London, and 9 miles south-west from York. It is situated on both banks of the Wharfe, over which it is a handsome stone bridge constructed with stones taken from the ruins of a castle which formerly stood on the south side of the river. The river is navigable for boats. The town has little trade, but it has previous to the formation of the wapentake between York and Leeds and Manchester, a place of great thoroughfare from York to the south-west. The church is dedicated to St. Mary; the living is a vicarage, in the archdeaconry and diocese of York, in the gift of the dean and chapter of York, and the net value of 224 has.

In 1833 there were seven daily schools, one of which was a grammar-school endowed with the rent of a farm, for which twenty scholars were free, and ten others were paid for by their parents. Another daily school was endowed by, and is supported for forty years, but it contained only twenty-four when visited by the Education Commissioners in 1833. There were also two day and boarding schools, and three Sunday-schools. The population in 1841 was 1825; in 1831 it was 1600. Tadcaster is the Calcaria of the Romans, which was an outpost of their chief military station Eboracum, now York.

Thirsk is a parish, market-town, and parliamentary borough, situated partly in the liberty of St. Peter of York, but chiefly in the wapentake of Bifordthorpe, in the North Riding, 14 miles south-west from York, 14 miles north-west of York, and 10 miles south-south-east of Northallerton. The parish comprises the borough of Thirsk, the township of Castle-Isebeck and Miniot, and the chapelry of Sowerby, and had an aggregate population of 2439 in 1841. The living is a vicarage, in the archdeaconry of Cleveland and diocese of York, with a gross income of 1437.

The church, which is dedicated to St. Mary Magdalene, is a large and handsome Gothic building, supposed to have been turned out of the ruins of the ancient castle. Thirsk contains likewise places of worship for the Society of Friends, Independents, and Wesleyan Methodists. One of the schools of the town is conducted in a school-house under the chancel of the church; another is a school for educating poor girls.

The town is pleasantly situated on both sides of the stream called Codebeck, a feeder of the Swale, in the fertile vale of Mowbray; that portion which lies east of the beck being called Old Thirsk, and that on the west side New Thirsk. As the town is in the extreme south-western extremity of the town is the site of the castle, which is said to have been erected by the Mowbray family in the year 959, and to have been a noble pile of building, but scarcely any vestiges of it now remain except the mount on which the keep formerly stood.

Old Thirsk consists of a long range of cottages on the road to Yarm and Stockton, and of a square, called St. James's Green, surrounded by buildings of a similar character, which marks the site of an ancient chapel founded by William de Mowbray, in the time of Henry I. Upon another green at Old Thirsk formerly stood a venerable elm-tree, under which, from time immemorial, the election of members of parliament took place, and where also it is said that Henry Percy, the fourth earl of Northumberland, was put to death during a popular tumult in 1482. The present manor house was destroyed by fire in 1818, having been inhabited by several mischievous boys. A substantial stone bridge, with arches of sufficient size to allow the free passage of the Coquet and the Swale, lies near the ruins and the mending of which connects the old with the new town, is a very useful and extensive market-place.

The present church is on the north-east extremity of the new town, and it is supposed that there was formerly a church in the old town, of which vestiges remain. It is a large and handsome building, though coarse linens and saddlery are made at the town; but it has a well-supplied market on Monday, where great quantities of provisions are bought for the market and other places; and there are fairs on Shrove-Tuesday the week before Easter, and on October 28 and 29, and the first Tuesday after December 11. The Great North of England Railway also passes a little west of the town, which is not a corporate borough but a burgage tenure borough by prescription. Old Thirsk town was called Thornede Waterhouse, is on the south bank of the Tees, and here are ships, rope, and timber yards, and wholesale merchandise. The tide rises several feet, and boats cannot ascend the river for three days; but at neap-tides they do not come farther than the Newbridge, on the Dutch river, 4 miles from Thirsk, and is the east side of the town the Stainforth and Keels are 10 miles long, connects the Trent and the Don; and at Newbridge, 4 miles from Thirsk, is a market-town. The Dutchman, in the year 1601, and the former is of sufficient importance to have been selected as one of the places for returning the average prices under the Com Act of 1842. A great portion of the surrounding country was once a marsh, but it has been drained by the Dutch, who, for reasons of economy and agriculture, commenced in the reign of Charles I. Cornelius Vermuyden, a Dutchman, who came over as a number of his countrymen. (A Newhoelme.) The idea of this immigration is not yet extinct in the vicinity, and families still exist who trace their descent to Dutch settlers.

The waggon in common use is evidently Dutch, and is not found beyond a limited district. The priest of Thirsk comprises 10,840 acres; and the population in 1841 was 2635, of whom 2480 were 840 houses inhabited, 68 uninhabited, and 1 building in 1841, 706 inhabited, 123 uninhabited, and there were 600,000. The town is lighted with gas. The church was formerly a chapel of ease to the parish of Thirsk, but it is now a separate parish. In consequence, it is said, of a funeral party coming over the marsh (now drained) having narrowly escaped drowning by the upsetting of the boat. The living is a perpetual

vicarage, in the archdeaconry and diocese of York, with an annual value of 117. The Universalist Baptists have a chapel, which is licensed for the celebration of marriages; and the Methodists, Independents, and Quakers have also places of worship. In 1833 there were 32 children educated from Travis's charity, and in 1841 from Dr. Brook's charity, and Dr. Brook's monuments being 1705 and 1706. Thirsk is in the central

area of Poor-Law Union.
Tickhill, a small market and post town in the West Riding, in the wapentake of Strafforth and Tickhill, on the borders of Nottinghamshire, 157 miles from London, and 43 miles south from York. The substratum of the town is limestone, which gives the place a very clean appearance. The streets are disposed nearly in the form of a cross by the roads from Doncaster to Worksop, and from Rotherham to Batley. The town is neither paved nor lighted, and the market, which is simply for butter, eggs, &c., was once but twice a week, and was disused until revived a few years ago. The market-cross is about 30 feet in height, and is a fair in August for cattle and merchandise. Tickhill was a place of importance in the middle ages, as may be inferred from its giving a name to the wapentake. Camden says, "Tickhill was of dignity heretofore, that all the manors hereabouts were inherited by the Honour of Tickhill." The castle is said to have been erected by Roger de Bully, one of the Norman followers of William the Conqueror, but several times reverted to the cross of St. Peter of York, but chiefly in the Holme-Beacon division of the wapentake of Hurthill, in the East Riding, about 188 miles from London, 10 miles south-east from York, and 10 miles west by north of Catterick. The church of Tickhill contains one chancel and three aisles, and six daily schools. There is an almshouse, a memorial foundation, for 14 poor widows. The parish of Tickhill comprises an area of 6470 acres, and includes the parishes of Staincross and Wicker Humley, which contain 140 acres. The parish was assessed in 1831, 821, 2064 in 1831, and 2040 in 1841, including 19 in entails. The population of the township of Tickhill being 1841: and it is stated that 60 persons were absent. Market-day is Monday; and the nearest post towns are Doncaster, at one mile, and the liberty of St. Peter of York, at nearly 1 mile. The church, which is dedicated to St. Saints, is an ancient edifice, with a comparatively modern spire, which has been substituted for an old one of wood; and the town contains chapels for Independents, Wesleyans, and other dissenters, and grammar-school, for various other schools. There are also a well-attended market, at which much corn is sold, on Wednesday, and fairs are held on the 14th of May and the 25th of September. The population of the township was 2821 in 1831, and 1847 in 1841.

The town is well built, and pleasantly situated on the north bank of the river Wharfe, over which there is a handsome stone bridge with a set of four elegant arches, and a dam constructed, over which the river forms a pretty cascade. By means of the dam several mills are worked, which grind corn, press oil-seeds, and rasp logwood for dyers. The town is a chapel-of-ease to Spofforth, and the living is a perpetual curacy, in the archdeaconry of Craven and diocese of Ripon, in the gift of the rector of Spofforth, of the net annual value of 100L. The Wesleyan Methodists and Independents have places of worship. The population of the township in 1841 was 1439; in 1831 it was 1321.

Yarm or Yaurm, is a parish and market-town in the western division of the liberty of Langbaurgh, in the North Riding: the town occupies a low peninsula nearly surrounded by the river Tees, about 237 miles from London, and 44 miles north-north-west from York. The town appears to have fallen in importance with the rise of Stockton, which is about 4 miles to the north-east, on the south side of the river, and partly, perhaps, in consequence of the destructive floods to which its low situation subjects it. In 1753, and again in 1822, the water covered the town to the depth of 7 feet, and in 1771 it rose still higher, being considerable and destructive. The town contains some good houses. The Tees is here crossed by a bridge of five arches, built in 1400 by Walter Skirlaw, bishop of Durham, and since much improved; and in 1805 an elegant iron bridge, of one arch, 180 feet span, was opened for the convenience of the trade on both banks of the river. The town is well supplied with coal from the Wensleydale and Guisborough districts. The town is largely supplied by the exportation of agricultural produce, but the corn trade, though formerly considerable, has declined. The town also derives some benefit from the salmon fishery in the Tees. The weekly market is on Thursday, and there are two fairs, one on the Thursday in Ascension week, or the 2nd of August, and the 19th and 20th of October, that on the last-mentioned day being a great cheese-fair. A court for the recovery of small debts is held here twice in every year. The population of the parish was 1630 in 1831, and 1811 in 1841.

Divisions for Ecclesiastical and Legal Purposes.—Yorkshire is in the archiepiscopal province of York, and until recently the whole county, with the exception of the Western Riding, was entirely in the diocese of Chester, was entirely in the diocese of York, in which it formed the archdeaconries of York, or the West Riding, comprising the deaneries of the city and Ainsty of York, Craven, Doncaster, and Pontefract; of the latter, which was founded an order in church by the Duke of St. George, and is situated in the diocese of York, and is situated in the diocese of the county, according to the statement given on the authority of the Population Returns for 1841, under the head of Statistics, is 623; but earlier authorities make it only 604, of which 180 are returned as 223 vicarages, and 123 perpetual curacies, according to Lewis's Topographical Dictionary of England. The ecclesiastical divisions of the county have been recently much altered, for the formation, under the Act of Parliament, dated October 5, 1836, of the new bishopric of Ripon, which was established by consent of the archbishop of York and the bishop of Chester, and which consists of all that part of the county which formerly belonged to the diocese of York, and of the deanery of Ripon, consists of a populous district in the West Riding, and of parts of the deaneries of the city and Ainsty of York, and of the dioceses of the county is divided between the dioceses of York and Ripon, which are subdivided as follows: The diocese of York consists of the archdeaconry of Craven, comprising the deaneries of the city and Ainsty, the liberties of the county, and the diocese of Ripon, containing the deaneries of Bilsdale, with 87 benefices, and of Doncaster, with 95 benefices, to the East Riding, containing the deaneries of Bilsdale, with 30 benefices, and Stockton, with 26 benefices, with 72 benefices, and of Cleveland, with 62 benefices, of the division of the county is divided between the dioceses of York and Ripon, which are subdivided as follows: The diocese of York consists of the archdeaconry of Craven, comprising the deaneries of the city and Ainsty, the liberties of the county, and the diocese of Ripon, containing the deaneries of Bilsdale, with 87 benefices, and of Doncaster, with 95 benefices, to the East Riding, containing the deaneries of Bilsdale, with 30 benefices, and Stockton, with 26 benefices, with 72 benefices, and of Cleveland, with 62 benefices, of the division of the county is divided between the dioceses of York and Ripon, which are subdivided as follows: The diocese of York consists of the archdeaconry of Craven, comprising the deaneries of the city and Ainsty, the liberties of the county, and the diocese of Ripon, containing the deaneries of Bilsdale, with 87 benefices, and of Doncaster, with 95 benefices, to the East Riding, containing the deaneries of Bilsdale, with 30 benefices, and Stockton, with 26 benefices, with 72 benefices, and of Cleveland, with 62 benefices, of the division of the county is divided between the dioceses of York and Ripon, which are subdivided as follows: The diocese of York consists of the archdeaconry of Craven, comprising the deaneries of the city and Ainsty, the liberties of the county, and the diocese of Ripon, containing the deaneries of Bilsdale, with 87 benefices, and of Doncaster, with 95 benefices, to the East Riding, containing the deaneries of Bilsdale, with 30 benefices, and Stockton, with 26 benefices, with 72 benefices, and of Cleveland, with 62 benefices.
and Riddell, with 34 benefices. The dioceae of Ripon consists of the archdeaconry of Craven, containing the deaneries of Craven, with 33 benefices, and of Pontefract, with 153 benefices; and that of Richmond, containing the deaneries of Boroughbridge, with 35 benefices, Richmond, with 34 benefices, Catterick, with 42 benefices, and Kirkby Lonsdale, with 10 benefices. According to the above details, which are derived from Coxe's 'Clergy List,' for the years 1831 and 1832, and from information collected from the records of some old benefices and the establishment of some new ones, it would appear that the total number of benefices in the diocese of York, which is now confined within the limits of the county, is about 525, and the number in the diocese of York, including the dioceses of Beverley, about 508, making a total for the county of about 832 benefices.

Yorkshire is in the northern circuit, and the assizes are held at York. The quarter-sessions for the city are held at York, those for the East Riding at Beverley, those for the West Riding at Wakefield, and those for the North Riding as follows:—The Easter sessions at Pontefract, the Midsummer at Skipton, Bradford, and Rotherham; the Michaelmas at Knaresborough, Leeds, and Doncaster; and the Christmas sessions at Knaresborough, Wakefield, and Selby.

The county gaol is at York, the house of correction for the North Riding at Northallerton, that for the East Riding at Beverley, and that for the West Riding at Wakefield. There are other houses for York, Richmond, Beverley, Hull, Leeds, Bradford, Knaresborough, Ripon, Pontefract, Rotherham, Doncaster, Halifax, Sheffield, and Rothwell.

It is a distinguishing peculiarity in the civil and military jurisdiction of Yorkshire, that each of the three Ridings has its ancient lord-lieutenant. The Ainsty, which was formerly a wapentake of the West Riding, but was annexed to the city of York, and placed under its jurisdiction in the 27th year of Henry VI., is considered part of the North Riding for parliamentary purposes. Although in the Population Return it is styled a wapentake of the West Riding; and the separate jurisdiction of the liberty of St. Peter of York, which comprehended all those parts of the city and county that belong to the cathedral church of St. Peter at York, and are situated within the Populous and Army, according to the Census of 1841, comprises 51 places in the East Riding, 42 in the North Riding, 25 in the West Riding, and 7 in the Ainsty, was abolished by the Act for reforming municipal corporations, 6 and 6 William IV., c. 76. Each Riding had formerly a separate judicial power, and its justices held their courts of quarter-sessions at York, and exercised civil and criminal jurisdiction over every place within the liberty, however distant it might be from the city. No commission of the peace is now granted, and civil and criminal courts are neither justices nor quarter-judges nor quarter-justices for the liberty. Sessions for the archbishop's liberty of Cawood, Wislows, and Otley are held quarterly at Otley, in January, April, July, and October.

The county of York antiently sent two members to parliament from the boroughs of Skipton, Otley, and Ripon, and the union abolished by that Act was 32; the numberness of the county will be found under the head of Statistics.

History and Antiquities.—At the time of the invasion of Britain by C. Julius Caesar, this part of the island, together with the neighbouring counties in the north of what is now Yorkshire, was called by some from the uncertainty of the most numerous and powerful of the ancient Britons, and the last to submit to the Romans. The Roman power was not established in this district until the time of the emperor Vespasian; and, when the year 40 A.D. of our era was added to our Christian era, there were only a small number of forts in this part of the island. After a century later, about the year 120, the emperor Hadrian visited Britain, and in consequence of the frequent incursions of the Caledonians into the northern district of Roman Britain, he formed a wall or rampart of earth and timber from the River Tyne at Pontefract to the River Forth near Edinburgh, which place had been his head-quarters in the west. This part of the island had its share in the numerous estates which followed between the Romans and the new Britons. The emperor Constantius Chlorus resid at a considerable time at York, and died there in May of the year 337; and his son Constantius, commonly called Constantine the Great, was proclaimed emperor at that city in 307. Between that time and the final withdrawal of the Roman forces from Britain in the 5th century, the territory of the province was subject to numerous invasions from the northern tribes, and the change of its inhabitants aggravated the anarchy and confusion of this part of the Roman empire. According to Richard Carew, whose account of the Romano-British province of Yorkshire is one of the best, the city of York was for a time the head-quarter of the kingdom of the Mercians, if not entirely, to the province of Maxima Censoria, and was inhabited by the Brigantes and the Picts or people of the East Riding.

Being chosen by the Romans as an occasional rendezvous, and as a market-place for the country, York and the surrounding country were supplied with many marks of their power and skill. They bestowed extraordinary attention upon the public roads of this district, which considerable roads exist even at the present time, and which indicate the presence of considerable settlements and populous districts. One of the roads of which the names are legible, is the New Hean or Yoredale road, which, under the name of the Wathing or Water Street, extended along the whole length of England from Rutupia (Richborough) in Kent to the wall of Scaesurae entered the county from Nottinghamshire and Chester, to York, and passed through Baines near Grassendale, over Scarsby and Ripburg to Barnsley, through Pontefract to Castleford, a little below the junction of the Wharfe and Calder, from which point the road was continued by Tadcaster to York. 'From this city,' says Herring, 'at York, wye dwell, the north-east road of the Ouse, crossing that river near Aldborough or Boroughbridge, and thence by Leeming Lane to Untedbridge (adjoining to which vestiges of Caractacum are to be seen), where, turning more to the north, we passed into the county of Durham.' Another military road led from Newcastle, now Manchester, to York, and passing by Saltburn, the five miles south of Malton, and Almondbury, about five miles south-east of Huddersfield, crossed the Pennine Escarpment by a mile-long Devil's Bridge, and passed through the present turnpike-road to Wakefield, whence it continued in the direction of the present road about half a mile to Pontefract, and then, turning to the left, in a military way for some miles to Wakefield, a mile north-west of which place the principal were—2 miles from Castleford by Selby, Barnsley, Emehurst, and Ackworth, to the Wakefield site or area of Pontefract; a road which appears to have passed through Pontefract a mile west to the vicarage of the parish of Wakefield, Wombwell, Stannington, Campell, and Hattfield, and also to have ri
fended northward to Castleford; a road from York in continuation of the route from Manchester to that city, proceeding to Malton, and then dividing into two branches, of which the first, which is now called Wake's Causeway, and a portion of which is in excellent preservation, twelve feet broad, paved with flint pebbles, and in some places raised more than three feet above the surface of the ground, led to Dunesty Bay (the Dunus Sinus of Poltemy), near which a fort was built. The second branch, the old road from York over the Wolds to Bridlington Bay, with a branch towards Humberside; and a road leading towards Patrington and the Spurn Point, which likewise branched from the last mentioned at Stamford Bridge, and from which, at the southernmost end of that place, Spurn Street extended southward to the village of Brough, on the Humber, opposite to Wintringham in Lincolnshire, whence a Roman road proceeded southward to Lincoln. Traces of Roman encampments, as Druidical or of the Tadcaster sort, have been discovered in several parts of the county; and Roman antiquities have been discovered in many places, especially in York and its vicinity. Tumuli and Druidical remains are also found in several places. The Wolds contain many of the former; and of the antiquities supposed to be Druidical may be mentioned a curious assemblage of rocks called Brannam Craggs, about nine miles west of Rippow, on which indications of rude sculpture are supposed to have been a Druidical temple, and, at the same place, a well called the Devil's Arrows, near Broughbridge, which some suppose to be Druidical, and others of Roman origin. The principal Roman stations were at Eboracum, now York; Cataractonium, or Cataractonum, now Cawthorpe; Elborough, near the seat of the earl of York; Durobrivium, both in Yorkshire, and not far from Halifax; Jarrow, at Aldborough; Ely, a little below the junction of the Aire and Calder; Danum, at Doncaster; Olicana, or Olicum, at Selby; Calleva, at Teddington; Dereventum, at Stamford Bridge and Selby; and Skipton, in the middle of that place, by which the Roman road passed from Skipton, in Westmorland, to York. A few other stations are marked on the Map of Ancient Britain, published by the Society for the Diffusion of Useful Knowledge, which also indicates the probable line of the Roman roads.

All that is known of the state of Yorkshire shortly after the termination of the Roman dominion is that it formed part of the British kingdom of De light, Deirca, or Deira, the name of which, as well as that of Els, one of its kings, an Anglian form of Athelstan, is well known in connection with the circumstance which is said to have induced Gregory to send St. Augustine and his companions as Christian missionaries to Britain. The boundaries of the Saxon and subsequently the Danish kingdom of York are not accurately known. They varied frequently with the fortunes of war, but it generally included the greater part of Yorkshire; and Baines observes that the Villa Regia, the seat of the Northumbrians, is conjectured to have been at Osmundburn on the northern bank of the River Derwent. Of the events connected with the subsequent contests for the sovereignty of Deira, and the establishment of the Danish power there, are described in the article above referred to, where also will be found sufficient details of the history of this district down to the time of Harold, the last of the Anglo-Saxon kings. During his reign his brother Tostig invaded his dominions under the circumstances detailed under Harold II., vol. xii., pp. 51, 52, and was defeated by him in September, 1066, in a great battle near Stamford Bridge, after which the victorious Harold returned to York, and was received with the first intelligence of the invasion of William of Normandy. Of the events which followed his victory at Hastings, so far as they relate to this county, some particulars are stated under Yorke, which city suffered dreadfully in the struggle between the Normans and the Danes, and afterwards with Northumbria, together with the Danes, whose assistance they had called in. So dire was the vengeance of William, that for the space of many years after his successful victory over the surrounding country lay totally uncultivated, becoming the haunt of robbers and beasts. Yorkshire is called Eurewicshire in the Domesday Survey, and appears then to have comprised very nearly its present limits. It had been previously, during the Saxon dominion, subdivided into three ridings, or, as they were originally called, trithings.

In the year 1138, during the reign of Stephen, the north of England, as far as York, was invaded and ravaged by David, king of Scotland, who was defeated near Northallerton, and returned to the north; and on his return, having been bribed by the neighbouring barons, who had been summoned by Thocto, the bishop of York, under the command of Ralph, bishop of the Orkneys, Walter l'Esée, and William de Albemarie. One of the next important events in the history of the county was the capture of the fugitive king by the inhabitants of York in 1141. The same year saw the capture of the favourite of Edward II., in Scarborough Castle, where he was taken prisoner by the earls of Pembroke and Warren. In 1318 the northern part of the county was ravaged, the towns of Northallerton, Boroughbridge, Scarborough, and Ripon, and many other places were pillaged, by the Scots under Douglas, who escaped to Scotland with an immense booty and numerous prisoners. In the following year another invasion of the Scotch, under the earl of Murray, advanced as far as York, and set fire to some houses in the city. In the same year the archbishop of York, that he, accompanied by the bishop of Ely and a great number of clergymen, collected an army of about 10,000 men, and pursued Murray as far as Myton on the river Swale, about twelve miles from York, where the Scotch were defeated and the king was taken prisoner. The city was threatened with a second invasion by the Danes, at York, and the inhabitants were thoroughly routed. From the number of clergy killed on this occasion, the engagement received the name of the White Battle. Shortly after, in 1321, Thomas, earl of Lancaster, and the husband of the lady Devereux, or Devereux, a sister of John, bishop of Ely, who took arms against Edward II., was defeated and taken at Boroughbridge; and he, with several of his party, was shortly afterwards beheaded at Pontefract. In 1347, taking advantage of the absence of Edward III. in his continental wars, David Bruce led a Scottish army into England, and devastated the country as far as York, where he was checked by the forces of Queen Philippa, whose court was then at York: and who, marching in person with her army against Bruce, brought him to battle at Neville's Cross, near Durham, where he was defeated. Yorkshire formed also the scene of many interesting events during the struggle between Richard II. and Bolingbroke, who eventually became king under the title of Henry IV.; and who, in 1399, on his return from banishment, landed at Scarborough, where he was received with the usual marks of respect and solemnity. Bolingbroke, which has but which has long since been washed away by the sea. He was immediately joined by several of the powerful northern barons, and he marched westward, by Hull, where he was refused admittance, towards Doncaster, where he landed on the metaphysical school. Robert of Devereux, who was assumed the crown, the deposed Richard II. was confined, successively, in the castles of Leeds, Knaresborough, and Pontefract, from the latter of which, after his death, his body was removed to London. In 1406 one of the conspirators, formed for the purpose of recovering the crown for King Henry, the son of Henry IV., and the brother of Henry V., was captured, and, with several other barons, was headed by Scroop, archbishop of York; but, though they collected a large body of troops to their rendezvous at York, Scroop and some others of the leaders were at last surprised and put to death by a force of hot, in the absence of Henry V., under the command of Ralph Nevill, earl of Westmorland, who com-
manded the troops against them; and the insurrection was thus stopped by their being taken prisoners, and afterwards beheaded. Percy escaped on this occasion, but in February, 1468, being again in arms, he was defeated and slain at the battle of Brannam Moor, near Newcastle, by Sir Thomas Rokeby, the sheriff of Yorkshire. During the long war between the houses of York and Lancaster this county was the scene of several remarkable events, among which was the defeat of Richard, duke of York, by the forces of the House of Lancaster, under Edward of Warwick, at Fishlake, in 1468, at the battle of Wakefield, in which he lost his life. His son, Edward, IV., attacked the forces of Henry VI., or rather of Margaret, in the following year, in this county, after the battles of Mortimer's Cross and Bernard's Heath. Having reached Pontefract, where he received the promise of surrender from the towns of York, Wakefield, and a small south of Tadcaster, where he routed the Lancastrian forces with a slaughter extraordinary even in that sanguinary war. The fugitives attempted to escape by Tadcaster-bridge, but being so closely pursu'd and pressed to reach it, they were overtaken and killed with such precipitation that the bodies of those drowned in the attempt formed a bridge for the passage of the survivors. The total number slain on this occasion is reported to have been 36,776, including many leading citizens, the result of which was that Henry and his queen fled to Scotland, while Edward advanced and took possession of York. Events having once more turned in favour of Henry, Edward fled to Holland in 1469; but on the 1st of July, 1470, in the following year, he returned to land, landed at Ravenspur with 2000 men, and, being well received, proceeded to York, where he planted a garrison, and thence marched southwards towards London, and won the battle of Barnet, which established him on the throne.

In the history of Yorkshire during the reign of Henry VII. was the raising and defeat of an insurrection of the northern counties against a land-tax which had been imposed for the support of the army, and in the proposal of which the earl of Northumberland was suspected of having taken an active part. Topcliffe, near Thirsk, was assailed by the insurgents, who killed him and many of his servants; but the insurrection was eventually put down by the earl of Surrey, and several of the leaders, among whom was John A'Chambre, were executed at York. After the defeat of Northumberland, however, he took a different route, arrived at York. Contrary to the advice of the marquis of Newcastle, Prince Rupert, York on the 2nd of July, to give battle to the parliamentary army, by which he was compelled to retreat. The marquis of Mantua, who had more than his lives and civil rights lost, chiefy the roads, and the parliamentary forces obtained possession of more than 100000 men, soldiers, and the artillery and stores of Rupert's army. The remnant of which soon escaped to Lancashire, and the marquis of Newcastle fled to the Continent. The parliament soon afterwards obtained possession of York, and several engagements were fought in the vicinity of the city, and the siege of the castle was raised on the 25th of June. In the following year, 1472, Scarborough also the royalists made a vigorous and protracted defence, but both town and castle at last yielded to the besieging forces. The town was taken on the 29th of March, 1489. Colonel Morice was again taken for the king by Colonel Morice, and endured a third prolonged siege, which, for a time, was threatened, but was finally surrendered on the 25th of March, 1449. Colonel Morice was again taken for the king by Colonel Morice, and endured a third protracted siege, which, for a time, was threatened, but was finally surrendered on the 25th of March, 1449.
the king in September, 1648, but about three months afterwards its final siege by the parliamentarians was terminated by the surrender of the garrison, the troops having been summoned to return.

Of the subsequent history of the county the leading events are— an insurrection raised in the West Riding, in the year 1663, by a body of misguided people, led by old parliamentary soldiers and others disaffected to the restored government, the list of whom, with the troops and militia, who attacked them in Farnley Wood, near Otley, and took many prisoners, of whom twenty-one were executed; the raising, during the rebellion of 1745, of four companies of foot, supported by the inhabitants of the county, on the command of government; the garrisoning of the towers, in several parts of the county, occasioned by the introduction of new and obnoxious regulations respecting the levying of the militia; and serious disturbances, occasioned chiefly by the distracted state of the manufacturing districts, in the winter of 1822, during which period, in the summer of 1842, although the more serious outbreaks on the latter occasion were confined to Lancashire.

Among the more remarkable antiquities of Yorkshire, excepting those of the city of York itself, are the remains of the castle of the Earls of Durham, in the parish of Tadcaster; a great number of castles, a few of which are still standing, and the walls of which are of enormous thickness, and which formerly covered seven acres, although now but few remains of them have been left. The castle of York, which was built by Serlo de Burgh, who accompanied William the Conqueror from Normandy; Pontefract castle, the walls of which are of enormous thickness, and which formerly covered seven acres, although now but few remains of them have been left; the castle of Helmsley, Malton, Malton, Pickering, Richmond, Skipton, Sheriff Hutton, and Skelton; whose remains are somewhat similar to those of Pontefract; and the tower of the Percy family, known as the ancient seat of the Percy family. There are also a few ancient mansions in the county which remain tenable, among which are Temple Newsome, near Leeds, and Whittington, near Helmsley; while the remains of many modern mansions in the county, especially in the West Riding, is also considerable.

The county of York contained, according to Burton's Map (1589), of Ecclesiastical History of Yorkshire; amongst 100 large houses of which 12 were abbey, 44 priors, 7 alien priors, 13 cells, and 28 houses of various orders. There were also three priories and three commanderies in the county. Of the several ecclesiastical establishments many ruins yet exist, of which are exceedingly beautiful. The principal remains of abbey are those of St. Mary's, at York; of Fountains, Kirkstall, Roche, and Selby, in the West Riding; of Ryedale, Kilwinning, and Whitby, in the North Riding. Among the priories are those of Knaresborough and Helmsley. Of the existing abbey churches, those of Knaresborough and Helmsley are of the most interest. There are villages and towns in the county of York.

YORK.

The English counties were divided into the West Riding, the East Riding, and the North Riding. The West Riding is the richest and the most populous part of the county, and contains the city of York, the largest town in the county. It is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses. The West Riding is the most northerly of the three divisions of York, and is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses. The West Riding is the most northerly of the three divisions of York, and is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses. The West Riding is the most northerly of the three divisions of York, and is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses.

The West Riding is, in the English counties, the most northerly division of the county of York. It is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses. The West Riding is the most northerly of the three divisions of York, and is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses. The West Riding is the most northerly of the three divisions of York, and is bounded on the north by the river Ouse, and on the south by the river Don. It is a large and fertile district, with a rich soil, and is noted for its fine cattle and horses.
edge-tools, and grindery in large proportion, makers of files, fire-tools, fenders, forks, table-knives, hall-pressers, knife-blades, mauls, razors, razors-smiths, razor-case makers, ring-makers, saw-smiths, scale-cutters, makers of scissors and shears, seythe-grinders, sheer-steel and sheer-makers, silversmiths, silver-platers, spade-makers, spring-knife grinders, steel-casters, steel-forgers, steel-burners, rollers and makers of steel, stove-grate makers, tilters, turners in wood and ivory, and all kinds of white-metal smiths, numbering all 11,600; and at Bradford and Eccles-field are about 1000 men employed in similar occupations. Carpets are made at Dewsbury, and glass and earthenware at Wakefield and other places; and about 200 nailers find employment at Darton and its vicinity.

The East Riding would be entirely agricultural, if the town of Kingston-upon-Hull (with its suburb Seaboe) did not contain the manufactures indispensable at an active sea-port, about 1900 being there employed in making ropes, sail-cloth, and sailing, and in preparing colours. Boilers for steam-engines are also made at Hull, but this manufactury is on a very limited scale.

The City of York contains nearly 200 men employed in linen manufacture, and eighteen comb-makers; the brush-makers are entered above under handicrafts.

The North Riding may be deemed entirely agricultural, the manufacturers inserted in the list being weavers of linen yarn, which seems to be entirely the product of domestic manufacture. There are many makers of much scattered swords at Hutton, 73 at Appleton-upon-Wiske, 62 at Osmotherley, 48 at Northallerton, 27 at Thornaby, 23 at Barnby, 22 at Sowerby, 21 at Burton-upon-Yare, and 20 at Broughton. At Starforth is a very limited manufacture of carpeting; at Whitley in Whitley-Sands, and about 90 men are employed in making sail-cloth and sack-cloth, and 17 in the delicate manufacture of jet ornaments.

If the registered baptisms, marriages, and deaths bore the same proportion to the actual population as in 1801, the population of Yorkshire, in the under-mentioned years, would have been as follows:—

The following table distinguishes the number of births—

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>276,647</td>
<td>268,635</td>
<td>55,334</td>
<td>76,266</td>
</tr>
<tr>
<td>1811</td>
<td>296,606</td>
<td>289,276</td>
<td>56,435</td>
<td>77,419</td>
</tr>
<tr>
<td>1821</td>
<td>316,610</td>
<td>286,398</td>
<td>58,490</td>
<td>78,030</td>
</tr>
<tr>
<td>1831</td>
<td>337,818</td>
<td>330,780</td>
<td>60,106</td>
<td>79,703</td>
</tr>
</tbody>
</table>

From 1801 to 1841 the population of the West Riding increased 588,819, or 104 per cent.; the East Riding, 83,944, or 75 per cent.; the North Riding, 48,307, or 51 per cent.; and the City and Ainsty, 13,928, or 54 per cent. The total increase of the whole county was 757,066, or 62 per cent. In the three years ending June, 1841, the proportion of marriages to the population was as under:—

<table>
<thead>
<tr>
<th>Marriage Rate</th>
<th>West Riding</th>
<th>East Riding</th>
<th>North Riding</th>
<th>England</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Marriages</td>
<td>1 in 1222</td>
<td>1 in 1107</td>
<td>1 in 136</td>
<td>1 in 127</td>
</tr>
</tbody>
</table>

In the same three years, the proportion of persons married under 21 years of age was: West Riding, 20:57; men, 7:43; East Riding, 18:57; men, 3:03; North Riding, 16:00, or 3:57. The Census Returns of 1841 give the birthplace of the population: the following is an abstract:—

The number of foreigners and British subjects abroad was, in the West Riding, or 1 per 1000; East Riding, 431, or 2 per 1000; in the North Riding, 240, or 5 per cent.; and in the Ainsty, 5, or 0.005. The proportion of persons whose ages were not specified was 2 in the West, 10 in the East, and 5 in the North Riding and Ainsty. The immigration into the West Riding is not less than in other counties where manufacture is predominant; but if the East and North Ridings have distinct counties of themselves, with a different name, the real extent of immigration into the West Riding will then be shown.

The number of persons to a square mile in 1841 was 446 in the West, 174 in the East, and 93 in the North Riding, and about 445 in the City and Ainsty. The Population Returns for 1841 the number of parishes to be 186 in the West, 197 in the East, and 192 in the Ainsty, and 48 in the City and Ainsty; and the position is separately given for 728 squares in the West, 409 in the East, and 603 in the North Riding; for 75 places in the City and Ainsty. The population of each hundred and borough, in 1841, for each of the parishes of the county, is shown in the following tables:—

West Riding.
### East Riding.

<table>
<thead>
<tr>
<th>AREA</th>
<th>HOUSES</th>
<th>PERSONS</th>
<th>AGES</th>
<th>PERSONS BORN</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAPENTAKE, &amp;c.</td>
<td>Inhabited</td>
<td>Uninhabited</td>
<td>Total</td>
<td>Males</td>
</tr>
<tr>
<td>———</td>
<td>———</td>
<td>———</td>
<td>———</td>
<td>———</td>
</tr>
<tr>
<td>Buckrose (Wapentake)</td>
<td>40,110</td>
<td>2,436</td>
<td>6,700</td>
<td>6,700</td>
</tr>
<tr>
<td>Dickeire</td>
<td>90,490</td>
<td>1,029</td>
<td>7,000</td>
<td>7,000</td>
</tr>
<tr>
<td>Holderness Wapentake</td>
<td>46,000</td>
<td>5,800</td>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Middle</td>
<td>54,300</td>
<td>3,500</td>
<td>9,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Beverley</td>
<td>2,170</td>
<td>2,450</td>
<td>2,600</td>
<td>2,600</td>
</tr>
<tr>
<td>Kingston-upon-Hull (Town)</td>
<td>10,610</td>
<td>719</td>
<td>1,786</td>
<td>1,786</td>
</tr>
<tr>
<td>Total</td>
<td>71,360</td>
<td>38,644</td>
<td>1,697,420</td>
<td>96,018</td>
</tr>
</tbody>
</table>

### North Riding.

<table>
<thead>
<tr>
<th>AREA</th>
<th>HOUSES</th>
<th>PERSONS</th>
<th>AGES</th>
<th>PERSONS BORN</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAPENTAKE, &amp;c.</td>
<td>Inhabited</td>
<td>Uninhabited</td>
<td>Total</td>
<td>Males</td>
</tr>
<tr>
<td>———</td>
<td>———</td>
<td>———</td>
<td>———</td>
<td>———</td>
</tr>
<tr>
<td>Allertonshire (Wapentake)</td>
<td>51,500</td>
<td>2,063</td>
<td>154,10</td>
<td>5,040</td>
</tr>
<tr>
<td>Kirkbith</td>
<td>97,020</td>
<td>2,216</td>
<td>101,10</td>
<td>7,096</td>
</tr>
<tr>
<td>Selmer</td>
<td>113,970</td>
<td>4,770</td>
<td>154,92</td>
<td>13,409</td>
</tr>
<tr>
<td>Zilling, East</td>
<td>49,910</td>
<td>1,643</td>
<td>90,8</td>
<td>3,773</td>
</tr>
<tr>
<td>Zilling, West</td>
<td>198,610</td>
<td>3,548</td>
<td>254,16</td>
<td>8,929</td>
</tr>
<tr>
<td>Lillibird</td>
<td>23,160</td>
<td>4,770</td>
<td>32,97</td>
<td>2,063</td>
</tr>
<tr>
<td>Jang, East</td>
<td>63,780</td>
<td>2,843</td>
<td>122,19</td>
<td>5,428</td>
</tr>
<tr>
<td>Jang, West</td>
<td>164,610</td>
<td>3,065</td>
<td>222</td>
<td>2,193</td>
</tr>
<tr>
<td>Loundeborough, East Division</td>
<td>116,330</td>
<td>3,576</td>
<td>282</td>
<td>8,064</td>
</tr>
<tr>
<td>Loundeborough, West Division (Liberty)</td>
<td>79,240</td>
<td>4,000</td>
<td>395</td>
<td>10,220</td>
</tr>
<tr>
<td>Pickering-Lythe (Wapentake)</td>
<td>142,570</td>
<td>3,984</td>
<td>156</td>
<td>8,604</td>
</tr>
<tr>
<td>Seydale</td>
<td>121,970</td>
<td>3,279</td>
<td>27</td>
<td>2,000</td>
</tr>
<tr>
<td>Whitby-Strand (Liberty)</td>
<td>43,320</td>
<td>3,231</td>
<td>307</td>
<td>6,659</td>
</tr>
<tr>
<td>Richmond (Borough)</td>
<td>2,310</td>
<td>318</td>
<td>23</td>
<td>1,674</td>
</tr>
<tr>
<td>Total</td>
<td>1,282,870</td>
<td>42,385</td>
<td>7,652</td>
<td>94,018</td>
</tr>
</tbody>
</table>

### City, and Ainity of the City of York.

| CITY AND AINITY | HOUSES | PERSONS | AGES | PERSONS BORN |
|——— |——— |——— |——— |——— |
| York City | 2,790 | 7,720 | 18,810 | 14,390 | 14,390 | 28,780 | 14,390 | 14,390 | 14,390 |
| York (City of) | 49,720 | 1,947 | 11,783 | 1,479 | 1,479 | 2,958 | 1,479 | 1,479 | 1,479 |
| Total | 52,510 | 7,760 | 18,810 | 14,390 | 14,390 | 28,780 | 14,390 | 14,390 | 14,390 |

### Grand Totals

| PERSONS BORN |
|——— |
| 3,669,510 | 216,060 | 25,352 | 2,075 | 788,592 | 802,667 | 1,591,480 | 390,150 | 399,306 | 408,542 | 423,351 | 1,462,496 | 159,541 |

The number of inhabited houses, &c. in 1831 was as follows:—

| COUNTY | Expenses, Crime, &c.—Sums expended for the relief of the poor:—1789-1830 (annual average), West Riding, 20,218; East, 4,110; North, 683; in 1776, West Riding, 50,060; East, 11,095; North, 12,734; in 1783-4-5 (average), West Riding, 66,065; East, 15,499; North, 18,669. The sums expended in the following years and the rate per head are given in the subjoined tables.— |
|——— |——— |
| W. Riding | E. Riding | N. Riding |
| Inhabited houses | 100,480 | 32,681 | 29,160 | 10,404 |
| Families | 198,464 | 36,960 | 40,760 | 7704 |
| Houses building | 1,676 | 298 | 117 | 74 |
| Houses uninhabited | 12,147 | 1,970 | 2,026 | 453 |

Between 1831 and 1841 the number of inhabited houses in the whole county increased from 15,591 to 15,998 (by 1260) inhabitants; and the number of persons to each house averaged 50 instead of 51. The total increase of houses was 18 per cent.
The proportion in 1841 of the total number of paupers to the total population was 8 per cent. in each Riding which is per cent. less than the average for England. In the West Riding there were 664 lunatics and inmates chargeable on the poor-rate in August, 1842; in the East Riding 173; and in the North Riding 144. In 1834 there were 3873 bastard children in the West Riding chargeable on the poor-rate; in the East Riding 167; in the North Riding, 1506; being respectively 1 in 221: 1 in 130; and 1 in 127 of the total population: in England the proportion was 1 in 215. The number of illegitimate births in 1834, in the West Riding, was 1534; or in the total number of births in that year: in the East Riding 292, or 1 in 17; and in the North Riding 430, or 14: the proportion for England being 1 in 20. The number affiliated in 1834-5, in the West Riding, was 75: in the East Riding 212; and in the North Riding 32. In 1855-6 there were 405 affiliated in the West, 20 in East, and 184 in the North Riding. In 1839-40 the number of illegitimate children registered in the West Riding was 3382, or 3-4 to 1000 inhabitants: in Notts and Herefordshire (which were the other counties that made a return) the proportion was 9-1000.

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The three Ridings contribute to the expense of improving
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otions for every ten, namely, West Riding, 12s.;
est Riding, 3s. 6d.; and North Riding, 4s. 6d.
he particulars of the county expenditure in 1834 are
os follows:—

<table>
<thead>
<tr>
<th>Wm. Riding</th>
<th>E. Riding</th>
<th>N. Riding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles</td>
<td>Miles</td>
<td>Miles</td>
</tr>
<tr>
<td>roads and roads repaired under local acts</td>
<td>102</td>
<td>38</td>
</tr>
<tr>
<td>turnpike roads</td>
<td>1,237</td>
<td>250</td>
</tr>
<tr>
<td>all other highways</td>
<td>4,236</td>
<td>1,657</td>
</tr>
<tr>
<td>total expenditure</td>
<td>£21,295</td>
<td>£30,803</td>
</tr>
</tbody>
</table>

The number of turnpike trusts in the whole county, in 1810, was 120; the income from tolls, 171,822l.; parish impositions in lieu of statute duty, 365l.; and total income, 201,438l., including 20,538l., borrowed on security of lands. The total expenditure for the year was 97,097l., including a debt of 11,424l. paid off, and 23,333l., or improvements. The bond and mortgage debt amounted to 955,325l.; the sum of 163,543l., remained as unpaid interest, making, with floating debts and balances due to treasurers, a total debt of 1,225,062l. In 1836 the debt hadfallen to 5-0 years' income; for the whole of England the proportion of income to debt for 45 years: the proportion of unpaid interest to the total debt was 11 per cent.; in England 12 per cent.
The following is an analysis of the church-rate returns:

<table>
<thead>
<tr>
<th>Wm. Riding</th>
<th>E. Riding</th>
<th>N. Riding City &amp; Ainsty</th>
</tr>
</thead>
<tbody>
<tr>
<td>church-rates</td>
<td>8,100</td>
<td>4,264</td>
</tr>
</tbody>
</table>

The total expenditure is £21,295, £30,803, £30,125.

In 1841 the proportion of persons committed, to the total population of the county, was 1 in 944; in England and Wales, 1 in 568. The commitments for 1842 are excluded from the average given above, as the numbers were swollen to the amount of 192 by the outbreak which occurred in the manufacturing districts; but even with this deduction the number of offenders in 1842 was nearly twice as great in 1836. The incidence of crime was consequently in four years from 1839 to 1842 inclusive, though the proportion is still below that of many counties. The commitments for each Riding cannot be given separately.

Of 2296 offenders (2218 males and 88 females) tried at the assizes and sessions in 1842, there were 153 charged with offences against the person; 273 with offences against property committed with violence; 1836 (including 1318 cases of simple larceny) with offences against property committed without violence; 8 with malicious offences against property; 50 were charged with forgery and counterfeiting base coin, and 270 with various misdemeanours, including 192 for riot, sedition. Of 1894 persons convicted, 2 were executed for murder; and of 9 others, against whom sentence of death was pronounced, 1 was transported for a long term, and 8 for life; and 2 others were also sentenced to transportation for life; 1 for above 15 years; 75 for above ten and not exceeding fifteen years; 100 for above seven and not exceeding ten years; and 118 for terms of eight years. The numbers transported were as follows:

- 1842: 157
- 1843: 133
- 1844: 9
- 1845: 6

The proportion of provinces committed in the county, on an average of several years, was 93:8 per cent.; in England and Wales, 89:3 per cent.

Savings Banks. There are thirty-four of these institutions in the county: the number of depositors to the total population is 1 in 26; and there is 1 depositor under 20l. to 48 persons; the proportion in both cases being rather low. The average amount invested by all classes of depositors was 31l. 19s. in England, 31l. The number of depositors and amount of deposits in each of the following years were as follows:

<table>
<thead>
<tr>
<th>1806</th>
<th>1807</th>
<th>1808</th>
<th>1809</th>
<th>1811</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits</td>
<td>£7,213</td>
<td>£9,618</td>
<td>£12,902</td>
<td>£12,419</td>
</tr>
</tbody>
</table>

The distribution of the sums invested in 1839, 1840, and 1841 is shown in the following table:

<table>
<thead>
<tr>
<th>1839</th>
<th>1840</th>
<th>1841</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits</td>
<td>£6,001</td>
<td>£6,025</td>
</tr>
</tbody>
</table>

The deposits of 747 Friendly Societies, not reckoned above, amounted in 1842, to 100,110l.; and 31,254l. were invested by 604 charitable institutions.

Elecitive Franchise. The actual number of county voters registered, in 1839, in the West Riding was 29,456; in the East Riding, 7965; and in the North Riding, 2913; and in 1839-40 the number of each class registered in the three Ridings were as under:

<table>
<thead>
<tr>
<th>1840</th>
<th>1841</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wm. Riding</td>
<td>1478</td>
</tr>
<tr>
<td>E. Riding</td>
<td>1540</td>
</tr>
<tr>
<td>N. Riding</td>
<td>1497</td>
</tr>
</tbody>
</table>

The numbers committed, convicted, and acquitted, in each year from 1834 to 1840, were as under:

<table>
<thead>
<tr>
<th>1835</th>
<th>1836</th>
<th>1837</th>
<th>1838</th>
<th>1839</th>
<th>1840</th>
</tr>
</thead>
<tbody>
<tr>
<td>Committed</td>
<td>1434</td>
<td>1231</td>
<td>1256</td>
<td>1276</td>
<td>1324</td>
</tr>
<tr>
<td>Acquitted</td>
<td>1491</td>
<td>1216</td>
<td>1136</td>
<td>1121</td>
<td>1132</td>
</tr>
<tr>
<td>Convicted</td>
<td>1401</td>
<td>1115</td>
<td>893</td>
<td>1076</td>
<td>1053</td>
</tr>
</tbody>
</table>

The numbers committed, convicted, and acquitted, in each year from 1834 to 1840, were as under:

<table>
<thead>
<tr>
<th>1835</th>
<th>1836</th>
<th>1837</th>
<th>1838</th>
<th>1839</th>
<th>1840</th>
</tr>
</thead>
<tbody>
<tr>
<td>Committed</td>
<td>1434</td>
<td>1231</td>
<td>1256</td>
<td>1276</td>
<td>1324</td>
</tr>
<tr>
<td>Acquitted</td>
<td>1491</td>
<td>1216</td>
<td>1136</td>
<td>1121</td>
<td>1132</td>
</tr>
<tr>
<td>Convicted</td>
<td>1401</td>
<td>1115</td>
<td>893</td>
<td>1076</td>
<td>1053</td>
</tr>
</tbody>
</table>

Leaseholders for life or term of years | 947 | 31 | 11 |
50l. tenants at will | 6,223 | 2,485 | 1,597 |
<table>
<thead>
<tr>
<th><strong>Tradesmen and Mercers</strong></th>
<th>W. Ridley</th>
<th>E. Ridley</th>
<th>N. Ridley</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voters</strong></td>
<td>78</td>
<td>14</td>
<td>41</td>
</tr>
<tr>
<td><strong>Qualified by offices</strong></td>
<td>103</td>
<td>122</td>
<td>6</td>
</tr>
<tr>
<td><strong>Joint and duplicate qualifications</strong></td>
<td>*</td>
<td>*</td>
<td>40</td>
</tr>
</tbody>
</table>

30,122+ 7,496 11,911

The constituency of the parliamentary boroughs in 1839-40 was as follows:

<table>
<thead>
<tr>
<th>Borough</th>
<th>Voters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beverley</td>
<td>1053</td>
</tr>
<tr>
<td>Bradford</td>
<td>1465</td>
</tr>
<tr>
<td>Halifax</td>
<td>873</td>
</tr>
<tr>
<td>Huddersfield</td>
<td>865</td>
</tr>
<tr>
<td>Hull</td>
<td>7475</td>
</tr>
<tr>
<td>Knaresborough</td>
<td>2941</td>
</tr>
<tr>
<td>Leeds</td>
<td>6182</td>
</tr>
<tr>
<td>Malton</td>
<td>558</td>
</tr>
<tr>
<td>York</td>
<td>1497</td>
</tr>
</tbody>
</table>

At Beverley there were 635 freemen; at Hull, 1668; Malton, 10; Scarborough, 6; and York, 2497.

**Education.**—Summary of Returns made to Parliament in 1833.—Sunday-schools returned from places where no other school existed; in the West Riding 34, scholars 2145; East Riding 8, scholars 275; North Riding 6, scholars 161; in the City and Ainsty all children attending Sunday-schools had the opportunity of attending other schools also. Sunday-schools, which were also duplicate schools: in the West Riding 77, scholars 5392; East Riding 35, scholars 2724; North Riding 34, scholars 2223; City and Ainsty 11, scholars 814: in the case of these schools duplicate entry was known to have taken place. Boarding-schools in the West Riding 91; East Riding 18; City and Ainsty 6: the scholars are included in the table below. Lending libraries were attached to 255 schools in the West Riding; 41 in the East Riding; 31 in the North Riding; and 15 in the City and Ainsty. The number of children returned as attending both Sunday and daily schools was as follows; but except in the cases above mentioned the extent of duplicate entries cannot be ascertained:

<table>
<thead>
<tr>
<th><strong>Schools</strong></th>
<th><strong>scholars</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>14049</td>
</tr>
<tr>
<td>Daily</td>
<td>70632</td>
</tr>
<tr>
<td>Total</td>
<td>214,423</td>
</tr>
</tbody>
</table>

**Maintenance of Schools.**

<table>
<thead>
<tr>
<th><strong>Schools</strong></th>
<th><strong>scholars</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant</td>
<td>14049</td>
</tr>
<tr>
<td>Daily</td>
<td>70632</td>
</tr>
<tr>
<td>Total</td>
<td>214,423</td>
</tr>
</tbody>
</table>

On an average of three years ending June, 1831, the number of persons married who signed the register was 32,212 for men, and 25,918 for women. In the East 19 and 41; and in the North Riding 23 and 40 for women. The superiority in the East and North Riding may be attributed to the large number of children (more than one-half) attending daily while in the West Riding the proportion, according to returns of 1833, was but one-third.

**YOUGHALL, or YOUGHAL, is a sea-port town, and a parish in the county of Waterford.**

Youghall is a town of remote antiquity, and it is said that the town was once a seat of a bishop, and that the town was the headquarters of the last battle of the Irish, which was fought in the year 1579. The town has since been the seat of a bishop, and the cathedral of that see is still preserved in the town.

The present Statistics of Education in York and Hull are given in the *Journal of the London Statistical Society,* the inquiry at both these places was undertaken by the Manchester Statistical Society. In 1843 Mr. Edward Baines, jun., of Leeds, undertook an elaborate inquiry into the state of elementary education in the manufacturing districts of the West Riding, the results of which he published in a short pamphlet.

- The number of joint and duplicate qualifications was estimated at 4518, or 15 per cent. on the total number.
- In this total number was added the following qualifications: - Freehold and copyhold 29; freehold and incomplete, leasehold and incomplete, freehold and leasehold, 867; qualifications where the tenure was not mentioned 98.

Mr. Baines's inquiry extended to parishes and townships, comprising a population of 844,563, according to the census of 1841. The proportion of Sunday scholars was found to be 1 in 5 of the total population, and 50 per cent. of the scholars were capable of reading the Scriptures. The number of scholars in daily and Sunday schools was 10 per cent. under the number given below as attending such schools. The following is an abstract of Mr. Baines's tables:

<table>
<thead>
<tr>
<th><strong>Schools</strong></th>
<th><strong>scholars</strong></th>
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<tbody>
<tr>
<td>Sunday</td>
<td>20,928</td>
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<tr>
<td>Daily</td>
<td>6,351</td>
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<tr>
<td>Total</td>
<td>8,353</td>
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</tbody>
</table>

**Youghall**
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According to the Report of the Corporation Commissioners, Youghall is supposed to be a borough by prescription. Besides the supposed charter of King John, previously mentioned, the town received, according to the above authority, three charters from Edward III., three from Richard II., one from Henry IV., two from Henry V., one from Edward IV., two from the reign of Richard III., one from Henry VII., three from Elizabeth, two from James I., one from Charles II., and one, which was not considered valid, from James II. The first charter of James I., granted in 1609, was the governing charter until the corporation was dissolved long, in 1830, by an Act of the Irish Repeal. The second charter was a regulation of municipal corporations in Ireland, in which Youghall was placed in Schedule B., or among towns which had the option of obtaining new corporations. The title of the dissolved corporation was: Burgesses, Burghers, and Commonalty of the town of Youghall; and the annual income amounted to about 114l. 8s. Id. of which 46l. 8s. Id. consisted of rents of land and buildings; 400l. was an annuity from the Blackwater Bridge Company, before 1824, and has been paid into the union fund; 30l. is the share of the ferry, and about 30l. from tolls and customs.

The right to the election of members of parliament, as well as the existence of the borough, appears to rest on prescription, but members have been sent ever since the year 1174, when one was sent to London until the Union, at which time there has been but one. The constituency was altered and extended under the Irish Reform Act, and the number of voters registered at the beginning of 1833 was 233.

From a mile and a half north-east of the town, the Blackwater is crossed by a light and elegant timber bridge, which connects Youghall with the county of Waterford. It was erected in 1830, at an expense of 25,000l. exclusive of 8500l. to the corporation for the ferry. This bridge is 172 ft. long, including a drawbridge of 40 feet, and is 16 ft. wide between the railings; and it is supported by 57 sets of piers or pillars.

It was formed by a company, to whom government advanced 10,000l. by way of loan, but the speculation has not proved remunerative. Among the interesting objects in the vicinity is a meadow called Myrtle Grove, which some say was erected, and which doubtless was for a considerable time inhabited, by Sir Walter Raleigh, in 1596. Raleigh was mayor of the town in 1588, and it is said that he was there after the death of Sir Walter Scott, and that the first potatoes brought by him from America were planted.

In Hall's 'Ireland,' however, it is stated that the house, which is still standing, though somewhat modernized, is said to have been originally the residence of the ware- ders, or bailiffs of the manor, and to have been altered to the character of an English manor-house by either Sir George Carew or Sir Richard Boyle, both of whom resided there. Of the other residences in the neighbourhood may be mentioned College House, a handsome mansion, belonging to the college of the University of Dublin; and near the site of an ancient house built in 1464, which has been taken down. The gates of the town have been removed, excepting one which is very dilapidated, and another which has been rebuilt; and there are still one of the ancient round towers, and considerable remains of the old wall, especially on the western side of the town. There are several ancient houses in the town and neighbourhood, among which are Tynte's castle, in the main street, and the remains of Kilrudder Castle, on the river Toragh, at the south-west end of the town. On the north-west side of the town are remains of a Danish fort, which appears to have been of great extent. Near the town are two chalybeate springs, which are but little used.

Reports of Irish Boundary Commissioners, and of the Commissioners on Municipal Corporations in Ireland, Population Returns, and other Parliamentary Papers; Lewis's Topographical Dictionary of Ireland; Archdall's Monasticon Hibernicum; Hall's Ireland.

PETER, Latinized Petrus Januus, is said to have been born in Forfarshire in Scotland, on 15th August, 1514. He studied at Geneva and Lausanne, and became intimate with Beza, to whom his uncle Henry Scirgerme made him known. Returning home in 1560, he was appointed co-tutor, along with Buchanan, of the young prince of Scotland, afterwards James I. of England. When the prince took the administration of the government, Young became a member of the privy council. In 1580 he was sent as ambassador to Frederic II. of Denmark, to conduct the negotiations as to the possession of the Oeste bay. He afterwards attended James on his romantic journey to Denmark to bring home his queen, and was employed in various missions to that and the neighbouring states. He ranks among the vindicators of Queen Mary. He prepared a short narrative of that queen's life and death, and its view of settling some of the charges expressed against her by David Chytraeus. This little work is incorporated with his Life by Smith. He settled in England, where he was knighted in 1614, and received a pension of 300l. In 1620 he retired to an estate which he possessed in South Wales, and engaged in the learned pursuits of life.

YOUNG, PATRICK. Latinized Patricius Junius, the son of Peter Young, was born on his father's estates in Ireland, in 1588, and was educated at Trinity College, Dublin, and at the University of Oxford, where he studied. Among his works are, as are afforded by contemporary continental critics, and the collection shows his circle of admirers has been both extensive and illustrous. From a young age he had been a admirer of the works of Greek and he carried on a considerable portion of his correspondence with his learned contemporaries in that tongue. His enthusiasm for ancient Greece extended to the modern inhabitants of that country, and he seems to have been anxious to reawaken the literature of their ancestors. He made the personal acquaintance of several Greeks, whom he invited to Ireland, supporting them there by his own funds, and dedicated to the cultivation of learning. He does not appear that more than one of these ever had by his subsequent exertions for the regeneration of his countrymen, the views of his enlightened patron; yet has not left behind him many literary remains of considerable value. He was an indolent man, and not anxious for literary fame. Seddon dedicates to him the 'Marmara Arundeliana,' a snarling term, describing himself, in drawing up the 15th as doing little more than collect and arrange the manuscripts which Young had, and the merit of which can only be assisted by his countryman, who translated the Latin works of King James. On the arrival in Ireland the Alexandrine MS. of the Bible in the royal library, which he had charge, he commenced a critical edition of some of the older MSS. of the whole contents of the MS. Of his exertions to be in pursuance of this project he left behind him a few vestiges. Among these there is a collection of MSS. from the fifteenth chapter of Numbers, which he published in the sixteenth volume of Polyglot Bible, under the title 'Patricii Junci Annotationes quas conven- em ad MS. Alexandrini Editionem, in quibus Colenso ex antiquissium eum Textu Hebraico et veterum Latinorum.' It was published in 1633, an edition of the Epistles of St. John, from the same MS., which will be found in the first volume of the 'Sacrosancta Concilia' of Labbe and Cossartina. In 1638 he published and dedicated an ' Annotationes in Revelationem,' written by his friend Robert Polio, bishop of London, in the time of Henry IV. It is said that he was the cause of applying the fees of the royal library to several other literary undertakings, and when the supremacy of the Parliamentary party suppose...
him of his appointment in that institution. In 1649 he retired to Bromfield in Essex, where he lived with his son-in-law Mr. Atwood. He died on the 7th September, 1652, according to a monumental inscription preserved in Bromfield church.

(Thomson, *Vita quarundam eruditorum et illustrarum tum Britannicarum.*)

YOUNG, EDMUND, was born in 1683, at Upham, a village about eight miles from the city of Winchester, in Hampshire. His father, the Rev. Edmund Young, was born in 1643, was educated at Winchester College, of which he was an independent member, October 13, 1705. A few months afterwards, on the death of the wife of his father, who was an annuitant, he removed to Upham, where he resided, he removed to Corpus Christi College in the University of Oxford, which was also one of his father's friends.

In 1708 he was nominated by Archbishop Tenison to a fellowship in All Souls' College, where he served two years afterwards as a tutor. He then, in 1710, was advanced to the degree of B.C.L. and to have adopted those religious principles which he retained throughout life. Tunstal, who frequently visited All Souls', speaking of him, says, 'The learned young Mr. Young has two last, on women, in 1727-8. They were extremely successful. Herbert Croft says that Young acquired 3000l. by them, but leaves it uncertain how the whole sum was obtained, by sitting, on the authority of Spence, that the Duke of Grafton gave him 2000l. for them. In 1728 he was admitted on Sir Robert Walpole being made a knight of the Garter.

In 1724 Young took orders, and was nominated one of the royal chaplains. He immediately withdrew his tragedy of 'The Brother' from the players, who bad it in rehearsal. In 1727 he published 'The Death of the Marquis of Carabyn,' in 1728, 'Ocean, an Ode, with a Discourse on Lyric Poetry,' to which was prefixed 'An Ode to the King, Pater Patriae,' and 'A True Discourse on the Book of Job,' and a poetical Letter to Mr. Tickell, occasioned by the Death of the Right Hon. Joseph Addison, folio.

Young had been tutor to Lord Burleigh, son of the Earl of Exeter, but having quarrelled with him, he went to New College, London, in 1710, so that he had been writing poetry for some years before he published any. On the 23rd of April, 1714, Young took the degree of B.C.L., and in the same year published a Poem on the Death of Queen Anne. He died in 1720, in consequence of his failing health as well as his poetry. For the foundation of the Codrington Library was laid, he was appointed to deliver the Latin oration, which he published, 'Oration habitia in Coll. Omnium Animarum curae, and his reputation as a bibliophile excelled Clucheot-Codringtonianae,' Oxon, 1716, 8vo.

On the 10th of June, 1719, he took the degree of D.C.L. In the same year his tragedy of 'Byssus' was acted at Drury-Lane with considerable success; and he published a 'Plea's criticism on Young's Works; and a poetical Letter to Mr. Tickell, occasioned by the Death of the Right Hon. Joseph Addison, folio.

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1733, was under ten years of age when the first books of the 'Night Thoughts' were published, while Lorenzo is represented as having been married to a lady whose name in the poem is Charis, and who died in childhood, leaving a son, Florelo.

Young seems to have begun the 'Night Thoughts' soon after the death of his wife. They were published in London, 1742-4. In 1735 he brought out his tragedy of 'The Brothers,' and in 1728 published one of those 'hymns of which Society for the Propagation of the Gospel, but the play having been unsuccessful, he gave the Society 1000£.

His prose work, 'The Centaur, not Fabulous,' in Six Letters on the Subject of Religion, was published in 1728. There was also a letter from Secker to Young, dated July 8, 1729. Secker was then Archbishop of Canterbury, and Young, at that time 74 years of age, had been soliciting the archbishop to use his influence with the king to obtain some preference for him. Secker's letter is characteristic. He excuses himself by saying, 'No encouragement hath ever been given me to mention things of this nature to his majesty: and concludes by observing, 'Your fortune and your reputation set you above the need of advancement, and your sentiments above that consciousness, if you would destroy which, of that of the public, is sincerely felt by, &c.' Young would understand, if he did not feel, Secker's allusion to the inconsistency between his 'sentiments' and his solicitation for worldly advancement. 'The Last Days' of this publication were 'published in 1739. At Greenwich, on the 4th of January, 1781, his ruling passion received a slight gratification—he succeeded Dr. Stephen Hales as clerk of the closet to the Princess Dowager of Wales.'

Young's second son Frederic was educated at Winchester, whence he went to New College, Oxford, and then to Balliol College, from which, according to the 'Biographia Britannica,' he was expelled for misbehavior. According to the same authority, Young was so much incensed at his son's misconduct that he refused to see him, even on his death-bed, but left him the bulk of his fortune, which was considerable. He left 1000£. to his housekeeper, and added a sum, by which he contrasted that, if she destroyed his manuscripts after his death, 'which would greatly oblige her deceased friend.' He left another 1000£. 'to his friend Henry Stevens, a huther near the Temple Gate,' but Stevens died before him. Young's son erected a monument to his mother and to his son in Westminster Abbey, under the inscription:

Young, from the commencement of his career as a writer almost to the termination of his long life, displayed an eager desire for place and preferment, and seems never to have missed the opportunity of placing his courtiers, who had them at their disposal. Every work, whether in prose or verse, each separate satire of 'The Love of Fame,' and each separate book of the 'Night Thoughts,' was addressed to some person of distinction, including Queen Anne, George I., and George II., and generally in language of the most unscrupulous flattery. Place, after all, he never obtained, and, except the offices of royal chaplain and clerk of the closet, the only preferment which he ever reached was the rectory of Welwyn, and that was given him by his college of Christ Church. Young's private character has not been minutely described. Croft went to the residence of his housekeeper in order to obtain information from her, but she had died just before. After her marriage he lived much in retirement at Welwyn, 'the world forgot him, and enough to be almost by the world forgot.' He seems to have been visited by few, but Count Tschmer, a foreigner, who spent four days with him when he was very old, says that young's character was such that he would have been polite, and his conversation lively and entertaining. He was strict in the performance of his religious duties, domestic as well as public. His asceticism and meditation was among the tombs of his own churchyard, but he does not seem to have been a great lover of gardening; his parisioners were obliged to him for a bowling-green and an assembly-room.

The distinguishing characteristic of Young's intellect was the fertility of his fancy; but the imagery with which it was supplied and the manner in which that imagery combined, were such as to qualify him for a wit rather than for a poet. He has apparent no taste for the realities of external nature, but he has metaphors, similes, and laboured comparisons drawn from all kinds of sources in extraordinary abundance. The combinations are often original, often beautiful, sometimes brilliantly scented, but in no instance do they derive merit only from words, but are for illustration and unsuitable to the circumstances in which they are used or the effect which he intended to produce. This want of skill in the adaptation of meanings, and the propriety of the poem, is a marked defect of his poetical character. But he has another defect, which, though of much less consequence, would have disqualified him from ever becoming a great poet. His versification is that of a versifier, not of a poet; even in the adjustment of feet, but but of rhymes, of lines, and half lines, and almost utterly devoid of the melody of rhythm. His favourite form of language is tithes, which may be suitable enough for the wild, but is a little suited to the poet. It must be admitted however that his language is often very compressed, and his lines are frequently a pregnant brevity which gives point and force to his illustrations.

The 'Last Days' consists of a series of descriptions of the world, which has a tend to attention of the terrors of the wicked, and the nerves of the virtuous. Sublimity is generally aimed at, but rare is it ever achieved; there is much of violence and extravagance in a stead of it. The versification is elaborately correct, but not natural. It was published in 1788, and is a very poor work. 'The Force of Religion' is a poetical dialogue between Lord Guildford and Lady Jane Grey previous to her execution. The pathetic is evident in it, as they are by Young, instead of being a no doubt he intended, specimens of magnificent imagery are extravagant to a degree of absurdity which is absurd and, but Young's peculiar style and the condemnation of these sketches, often slight and generally superficial, is true, and spirited, and sparkling with illustrative truth; and though much of the manner in which they described passed away, they are still perfectly intelligible and amusing. In poems of this kind, even Young's peculiar taste for antithesis, and his short and broken style of versification, can hardly be regarded as objectionable. The 'Night Thoughts' are a series of argumentative poems in blank verse, in proof of the immortality of the soul and of the existence of God. The necessity of religious and moral conduct, Young's exhibitions of life are those of a man who had dwelt with the world, and had observed it well; and though they are generally somewhat gloomy, and often a tragedy, yet they are not without their bright spots. The whole is a beautiful poem, written in the style of blank verse; and it is of those poems which will be read for the sake of their beauty, and not for the sake of their argument or narrative. The 'Love of Fame' is a series of satires, each more or less amusing. In poems of this kind, even Young's peculiar taste for antithesis, and his short and broken style of versification, can hardly be regarded as objectionable.
abundance, superabundance we may say, of its illustrative ornaments. We have already described the nature of these ornaments in speaking of his poetry generally, but an instance or two may be given just to show his mode of working them. Thus Narcissus is compared to a dew-drop—

So bright, so beautiful, so pure;
Sparkling, and exalted, and gone to heaven.

The disappointment of human hopes—

Life to the last, but heaven's alone.

Sense and wit compared—

Sense is our beacon, wit is but the plaque;
The road is the same, the manner differs.
Sense is the diamond, wealthly, sad, sound;
When one of the image—But wit, apart is a diamond still.

The advantages of conversation—

Thoughts shut up wait air.
And spoil like fruits until they are expunged.

The Centaur not Fabulous is a satire in prose, an exaggerated display of the life "in vogue," as he expresses it. The Remarks on Original Composition were addressed in a letter to Richardson the novelist, and though written when Young was very old, they are not only of good sense but great sense as much as if they had been written ir the prime of life; they are rather gloomy perhaps, but very entertaining.

Young wrote several Odes, some expressly in imitation of Fidlar's manner. They are all signal failures. He has little or no poetical imaginations, probably as inapposite to the dignity of the ode, and he has nothing in the place of them. The thoughts are either common or bombastic, and the versification is only fit for nursery rhymes. The Centaur is a collection of several of these verses written in a familiar style, and though imbued in tone, indicates no decay of his powers.

The three tragedies are all of the heroic class. The characters are above nature or out of it, and their thoughts and hasty and unprepared to ordinary humanity; he wrote no sympathy. The Revenge however still keeps possession of the stage whenever an actor appears who is capable of displaying the exaggerated but magnificent passion of Zangis. The plot is an imitation of that of Othello; it has more incident than either of the other tragedies, and the thoughts and language are nearer to those of actual life.

(Coote's 'Life of Young,' in Johnson's Lives of the Poets. Bioggraphia Britannica; Young's Works.)

YOU SK. A. B. H. With men fates as much as if they had been written in the prime of life; they are rather gloomy perhaps, but very entertaining.

Arthur Young was a Doctor of Divinity, a prebendary of Canterbury, and chaplain to the Lord of the Manor of Compton. The subject of this memoir was his third son.

Arthur Young was educated at Laetam school, where he went in 1778, being then about seven years of age. Leaving that school in 1781, he showed considerable talents at school, where he remained till 1786, when he was apprenticed to the mercantile house of Mr. Robinson, at Lynn. In the hopes of his becoming in time a thriving merchant; he had no need to this profession; but as this apprenticeship cost, would have maintained him at college, and he might have become qualified to hold the rectory of Bradford, which was then held by his father. As the rector of a large agricultural parish, there is every reason to suppose that his latent love of agriculture would have been fostered. He would probably have been equally zealous in this pursuit without so great a power to merit success as he was called on by circumstances to make the improvement of the several farms he occupied.

Having no taste for business, he took to reading at Lynn, and read every book he could procure. At seventeen years of age, he was much attached to political pamphlets, entitled 'The Theatre of the present War in North America,' for which he got 10l. worth of books from the publisher, to a him a great treasure. After his father's death, which happened in 1790, he was much tempted, by the offer of a pair of elections, to enter this world without, but his mother would not hear of it, and like a good son he gave up all thoughts of it. He began a periodical work, called the 'Universal Museum,' but gave it up after the sixth number, by the advice of Dr. Samuel Johnson. His whole fortune then consisted of a copyhold estate of 20 acres, worth annually as many pounds. His mother had a lease of a farm of 50 acres at Bradfield; and on the renewing the lease, she gave him the management, and he commenced practical farmer, without any real practical knowledge of farming, and was full of wild schemes. He afterwards himself confessed. In the following year he became a contributor to the 'Universal Museum,' the first agricultural work he tried his pen in. He married in the same year, 1783, Miss Mary Wilmot, as a marriage of convenience on both sides, this union was not very happy. In 1797 he undertook the management, on his own account, of a farm called Sampford Hall, in Essex, consisting of 300 acres of land. There he was in his element, making experiments and observing, and it is when he published the results in two thick vols. 4to., under the title of 'A Course of Experimental Agriculture, containing an exact Register of the business transacted during five years on near 300 acres of various soils. Dodsley, 1797. This style in which he brought out his book, which means instructive, was brought out, on fine paper, large type, and wide margin, proves that either the public were beginning to have a taste for agricultural works, or that Arthur Young had too favourable an opinion of the use of his book, which was injured by the publication, and who bore it, it is not now easy to say; we only know that we bought the book handsomely bound in call at the price of waste paper. But this work was published after his tour through the Southern Counties of England, a work which became very popular, and of which several editions were sold. Young was a keen observer, and had a ready and lively mode of communicating his observations; if he was sometimes rather hasty in his conclusions, or supercilious in his remarks, he succeeded in elevating them by an easy and sometimes imaginative style. An account of proceedings and experiments on a poor farm, not always very judiciously planned or executed, could not be very entertaining or instructive. After five years, in which he suffered great losses and disappointment, he was glad to give 100l. to a practical farmer to take the lease off his hands. Where the literary and scientific farmer had failed entirely, the practical farmer saved a little fortune. It is amusing to read Young's invective against the soil, climate, and everything about this horrid farm: but when it is considered that he only saw it from Saturday till Monday, and was occupied as a parliamentary reporter the remainder of the time, the wonder is, the sense of this will be caused by the fact of his having time to note down the results of his experiments so as to make them true. In the year 1794 he was induced, by the promise of his 'Six Weeks' Tour,' to take another in the north of England, of which he published a narrative and the results of his observations; but this enterprise, like all his others, was in vain, and the wonder is, the sense of this will be caused by the fact of his having time to note down the results of his experiments so as to make them true.
gave it a strong impetus, and blew it into a vivid flame. Many tours had been made through every part of Britain, and many lively descriptions had been published, but in none were the agricultural and political circumstances of different districts accurately recorded. Wherever he went he was received by proprietors and farmers with the greatest frankness and hospitality. In his discussions on their different modes of cultivating the soil, he acquired extensive practical knowledge, and also imparted it to his hosts: by placing before them the more rational and economical courses adopted in other districts, he led them to make experiments; and if these, somewhat hastily conducted, often proved failures, he always tended to make men reflect and compare, and often led them to see their errors in management. By means of his publications distant parts of the country became acquainted with practices which were entirely unknown before, by a small circle in which they had been gradually adopted. Even the failures, occasioned by adopting systems and rotations not suited to every soil, gave useful lessons, and pointed out the principles on which the most advantageous systems were to be founded.

Wherever Young met with the cultivation of any peculiar plant, whether for the use of man or beast, and observed more than ordinary luxuriance in its growth, he became an enthusiastic admirer of it, and recommended it for trial to his husbandmen. Of these introductions he was justly a public virtuote, and he recommended its cultivation on every opportunity. Another plant which gave an attention was wild chicory (chicorium intybus), the feeding qualities of which he much exaggerated, thinking it so important, that in the greater part of England it was established as a necessary article of diet.

Mr. Young was also secretary, in order to ascertain the state of agriculture in all parts of the kingdom, one of the questions was, "Do you sow chicory?" whereas this plant had only been tried by a few individuals, and not lost its momentary novelty on that account. We mention this circumstance to show how warmly he took up any apparent improvement and endeavoured to promote its general adoption. This zeal in the cause gave a charm to his works, which were written in a lively and imaginative style, to a subject where nothing was met with but dry details. When he sometimes led his readers a little out of the straight path of sober practice, they readily forgave him for the sake of his motives and his zeal. In 1771 he published that useful and well-known work entitled the "Pamphlet of the Farmer's Calendar," which has gone through innumerable editions, and is still a standard agricultural work. At the same time, as if to show the versatility of his genius, he published "Political Essays on the present State of the British Empire," and "Observations on the General Course of Weather." In 1773 he published a pamphlet entitled "The Land," in which he endeavoured to increase his income, which, notwithstanding the profits of his publications, did not suffice for his expenses and experiments, he had become a parliamentary reporter for the "Morning Post," in which an arduous task he engaged for five years, which brought him no approach to the detriment of his farming operations, which he could only occasionally superintend.

In 1774 he published "Political Arithmetic," which work was soon translated into several foreign languages. In 1776 and 1777 he made his tour through Ireland, one of those which greatly increased his knowledge, if not of the perfections of farming, certainly of its most glaring defects in that fertile country. His decided disapprobation of the bounds of the power of the clergy, and the disadvantages of the land-captain, who on the land-captains of corn to Dublin drew the serious attention of the ruling powers to this subject. In the next session of parliament this bounty was reduced one-half, and soon after entirely abolished. For this essential service to the prosperity of Ireland, he received only the cold thanks of the Dublin Society. He warmly supported the claims of the Roman Catholics to the removal of all political disability owing to difference of religion, showing that the penal laws then in force were laws against the industry of the country.

In 1777 Mr. Young received a medal from the Salford Agricultural Society, inscribed "For his Services to the Public." After this he undertook the management of the estates of Sir Richard Gregorian at Milltown, in the county of Cork, where he resided for two years in a house built on purpose for him. In 1779 he returned to his mother at Bradford; it was then that he had the project of emigrating to America, which he relinquished in consequence of the objections of his mother. He therefore bid himself with renewed zeal to the practice of husbandry. He was employed with his own hands in various scientific pursuits, analyzing soils, and making numerous experiments, for which he obtained the gold medal of the Society of Arts. In 1782 he entered into a great controversy with Mr. Capel Loft on the expedients of the county of Suffolk presenting the government with a 74-gun ship. This was carried on some time in the "Plymouth Post," and drew the attention of the public to that paper.

The fame of Arthur Young had now spread far and wide, and reached even the frozen regions of the North. The Emperor of Russia was informed that the English agriculturist could be instructed by him in agriculture, and in the following year sent him a magnificent golden snuff-box, and two warm white mink coats for his wife and daughter.

In 1784 he began the publication of his "Anatomy of Agriculture," which he continued till the work extended to 45 vols. 8vo, containing a great fund of agricultural information. In this work all the contributions have been of their authors annexed, which adds much to its advantage, even King George IV andyoung Mr. Young an account of the farm of Mr. Ducket, at Petersham, under the signature of Ralph Reuben. Among other important communications may be noticed the "Letters on the present State of Agriculture in Ireland," written by Dr. Banks, and his "Outline of a Professor of modern history at the university of Cambridge.

In 1785 Mr. Young's mother died; he always entertained the warmest affection for her, and in several instances we have seen, gave up favourable schemes in deference to her wishes. In the next year he lost his respected son, who was killed by a fall from his horse while hunting near George III.

In the spring of 1787 he received a pressing invitation to visit France, to accompany the Chevalier de Broglie to the Pyrenees, which he accepted with joy, and returned to England in the following winter. At this time a discussion took place about the Wool Bill, and the farmers of Suffolk deputed Mr. Young to support a petition against it, and the land-banks, which was deputed from Lincolnshire for the same purpose. They did not however meet with complete success, but they caused some of the most obvious clauses of the bill to be modified. The manufacturers, for his interference, were sufficiently rewarded.

In 1789 he began to circulate his "Agricultural Survey of that country, which the French agriculture acknowledged necessary to have one edition of his "Agricultural Survey of that country, which the French agriculture acknowledged necessary to have one edition of their systems of husbandry. He did not however publish it till he had made a third tour through that extensive kingdom. During the interval of the two last tours he was occupied in introducing the collecting of grass seeds by hand, for the purpose of destroying artificial meadows, and, among many other useful grasses, introduced the cockedfoot (dactylus glomeratus) and the created grass (cyonurus cristatus). The style of his books is lively, and his descriptions amusing as well as interesting.

About this time he entered into a correspondence with General Washington, which was afterwards published in a pamphlet. Another circumstance on which he was very proud was that he had been commissioned by the king of a Merino ram. In 1788 he published a pamphlet, which met with great success, entitled "The Example of France a Warning to Britain." He received the thanks of several patriotic associations, while the Tory party celebrated him of apostacy, and he had been rather inclined to favour the liberal party and approve of the French revolution, but the horrors which it brought forth entirely disgusted him. In this pamphlet Mr. Young took occasion to show how the Jacobins, those infamous villains, who had established under the name of the Jacobinical wav, and a which lie himself served as a private in the ranks, under Lord Brougham, afterwards Marquis Cornwallis.

In order to put into practice his various schemes for the
improvement of waste lands, he purchased 4400 acres of uncultivated land in Yorkshire; but luckily for his purse, he would probably have suffered much in the experi-
ment, the Board of Agriculture was established, and the
office of secretary was offered to him. This was exactly
suitable to his taste and activity, and the salary of 400£. per
annum, with a house rent-free, made the situation desirable
in the score of industries.

A great compliment was paid to Arthur Young, in 1801,
by the French Directory, who ordered all his agricultural
works to be translated and published at Paris, in 20 vols.
and, under the title of "Le Cultivateur Anglais," and in the
same year, he had described Litchen, Norfolk, Hart-
ford, Essex, and Oxford. In 1795 he published two poli-
tical pamphlets, entitled 'The Constitution safe without
Reform,' and 'An Idea of the present State of France.'

At the desire of the Board of Agriculture he drew up
the Country Reports, beginning with that of Suffol, to
which he added four others in second Lithograph, Nov.
and Oxford. In 1798 he published a letter to Mr. Wilberforce,
"On the State of the Public Mind," and, in 1800, a pamphlet
"On the Question of Scarcity." In 1804 the Bath and
Wells of England Society adjudged their Bedfordford medal
to him on account of a pamphlet on the "Foundations of
Manners." In the same year he received the present of a
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antient Gaelic poems. An interesting paper by Dr. Young on the 'Origin and Theory of the Gothic Arch' is published in the third volume. In this paper the writer offers an opinion that the Gothic arches were invented to employ pointed arches in their buildings from the knowledge of their mathematical properties: from an investigation of their strength, on scientific principles, he comes to the conclusion that a pointed arch whose radius of curvature is equal to half the span, or the distance between the supporting pillars, is the weakest of the kind, and also that the strength increases as the radius of the curve becomes, within certain limits, either less or greater than the span. In comparing low Gothic arches with arches of a semicircular form, he proves that, when the radius of the latter is equal to three-fourths of the span, the strength is to that of a semicircular arch of equal span as 1000 to 1257; and when the radius is two-thirds of the span, as 1000 to 1210. In the fourth volume of the 'Transactions' there is a copy of Dr. Young's paper on the correction of the spheroidal aberration in the object-lenses of telescopes.

Besides these contributions to the Academy, Dr. Young published separately. An Essay on the Phenomena of Sound was published in 1775. (The paper was not read in the Academy.) He subsequently published a short essay on the primitive colours in solar light, and on the precision of the equinoxes. His last work was that which he entitled 'Principles of Natural Philosophy,' 1802, 1803, and which contains a restatement of the features of the physics which he had delivered at the University.

YOUNG, THOMAS. There are no trustworthy materials for the life of Dr. Young, and for some years past it has been known that a biography of him is in preparation by an author who has been specifically qualified for the undertaking. With much regret at not being able to wait the appearance of this account, we must do the best we can with what is contained in the Gentleman's Magazine' and the Essay on Philosophical Language, which he wrote.

Dr. Young was born at Merton in Sussex, on June 13, 1732: his parents were of the Quaker persuasion. He received his first education at a dame-school at Minahead, where he resided with his mother's father, Mr. Robert Davies. It is said that he could read tolerably at the age of six years, and his early memory was extraordinary. As six he was placed with a schoolmaster at Bristol, and, two years afterwards, the access which he gained to the instruments of a surveyor of his acquaintance seems to have decided his vocation: he applied himself immediately to mathematics. From all this he was removed to Cambridge. He would have done well to have taken their advice: the great drawback upon his scientific hopes was the want of a sufficient knowledge of mathematics, which all who can appreciate the truly scientific spirit of the age got on with but little knowledge of, and the presumption is strong that if he had been able to give full vent to his talents with regard to that subject, he would have done more than his share to elevate the sciences, and the position of his country in the world of science.

M. Arago says that during this period he learned, besides Greek and Latin, also French, Italian, Hebrew, Persian, and Arabic, the two former of the last five to find out the contents of some books of Euclid, Archimedes, and Homer, the very books known to us in manuscript. He never learned the Bible in the original, the two last to decide for himself a question raised in casual conversation as to whether the Oriental languages presented differences as decided as the European. Young's early acquirements are known to have been extensive, and a very fair talent for languages, but it is hardly safe to attribute his learning any one particular language to a conversation which probably, if it ever happened at all, was the consequence of his thoughts dwelling on the subject, and not the result of study.

Moreover, it is to be remembered that the friends and relatives of a boy of talent are very apt to exaggerate his early acquirements, particularly if he afterwards becomes a distinguished man.

At all events he was also much given to botany, and determined to make himself a microscope for the examination of plants. The algebraical formulae which he met with had fluxional symbols, which arrested his progress; he accordingly set himself to study fluxions, that he might get the knowledge necessary to understand and construct a microscope to go on with his botanical pursuits. His close attention to these and other things had nearly proved fatal to him at the age of fourteen; symptoms of consumption appeared, which however were happily overcome by early attention.

Among the English, says M. Arago, it is rarely that a man of fortune, when he takes a private tutor for his children, omits to find him a camarade d'étude some youth of an age who is particularly successful in his studies. They were not, we confess, aware of this nearly universal custom. Moreover, Dr. Young had been admitted to the society of a gentleman of Herefordshire, as companion to his own private tutor of both was Mr. John Hodgkin, afterwards published the 'Calligraphia Graeca'.

To Young himself was attributed the suggestion of the word 'calligraphia' to be written by him in a note in the margin of his writing book in 1773, which he may not have been the first to use, but he was the first to introduce its use. On the day of Young's arrival at his destination his tutor desired to copy some sentences as a specimen of his handwriting; he had made a point of not turning his back on the test, he begged to retire into another room. The fear of his absence excited some remark; but on his return he presented the sentences required, not only beautifully written, but translated into nine different languages.

At this time he drew up a synopsis of the development of philosophical systems of the Greeks, from the original subtilities, according to his friends. M. Arago speaks of writing as still in existence, and states that doing preparation Young's mind was gradually prepared to absorb another of the peculiar principles of the system, which he was brought up with, which took place some years afterwards. During journeys to London, also made for this time with the family in which he lived, Young became acquainted with, and was taught chemistry by, Dr. Hogg, of the Royal Institution. It is a moment to advocate the claims of Dr. Hogg as a material portion of the discovery of the atomic theory as the place of the allusion seems unfortunate; for the presumption is strong that if he had been able to give full vent to his talents with regard to that subject, he would have done more than his share to elevate the sciences, and the position of his country in the world of science.

His maternal uncle, Dr. Brockleby, now presented to Burke, Wymsham, and the Duke of Richmond, both latter, then Master of the Ordnance, offered the position of assistant-secretary: this he was prepared to accept, and he left Cambridge. He would have done well to have taken their advice: the great drawback upon his scientific hopes was the want of a sufficient knowledge of mathematics, which all who can appreciate the truly scientific spirit of the age got on with but little knowledge of, and the presumption is strong that if he had been able to give full vent to his talents with regard to that subject, he would have done more than his share to elevate the sciences, and the position of his country in the world of science.

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As soon as Young had received his doctor's degree, he settled in London as a physician, and continued to practice till his death, which took place May 10, 1829. The authorities here begin to cease giving dates, and no plant appears to have been raised to a prominent circumstance of his remaining life in order.

As a professional man, Young was not successful. Knowledge, and his power of tracing consequences to him, it is said, an undiscouraged and warning practice. He had a keen perception that the just as well as to be approved. It is hardly necessary to point out that which are connected with medicine like to hear, and his courses were accordingly not well attended: indeed it has been said that they were above the students' comprehension. As a lecturer at the Royal Institution, it is said that he was much in demand between audiences. With the effect of these and other disappointments was combined the feeling that his pure and successes were not properly appreciated, and that a long time was not the case. On these points he is said to be very well to support the comment currently made by M. Arago.

In 1818 Young was appointed secretary of the Royal Society, and in 1821 he was elected a member of the British Association for the Advancement of Science.

M. Arago makes some strong remarks upon his original not having been inserted in Westminster Abbey, and says that there was no occasion for such an omission.
YPR, 719

YRIARTE, JUAN DE, was born at Orotava, in the island of Tenerife, on the 15th of December, 1702. His father was a native of Orotava, and his mother was a native of Tenerife. His father, who entered a high opinion of Frenchmen, sent him to France, under the charge of Pedro de Hely, French consul in the Canaries, who was returning to his native country. He sailed from Cadiz on the 10th of December, 1718, and arrived in the Canaries 1724. The year 1714 was spent in attendance at the public schools of Paris; in April, 1715, Hely transferred his residence to Rouen, whither his ward accompanied him. At what time Yriarte returned to Paris is unknown, but he spent eight years in the college of Louis le Grand, where he distinguished himself by his acquirements in the classical languages and in the mathematics. Before returning to Tenerife he visited London, apparently with a view to make himself master of the English language. His stay there was short: the intelligence of his father's declining health precipitated his departure.

On his arrival at Orotava, some time in 1724, he found his father already dead. He fulfilled his father's wish that Juan should proceed from the college of Louis le Grand to the University of Salamanca, and study law in some of the Spanish universities. The young man remained some months at Orotava, seemingly insolvent to follow out the career designed for him by his father. He went to the University of Salamanca, and there he was busy extending his knowledge of the English language acquired during his short residence in London. At last he resolved to comply with the wishes of his deceased parent, and sailed for Spain about the end of 1726.

Yriarte's knowledge of languages and his passionate love of books alike qualified him for filling the latter post. During the thirty-nine years that he continued librarian he added two thousand manuscripts and upwards of ten thousand printed volumes to the collection. In 1729 he published a catalogue of the logical works contained in the library; in 1735, a catalogue of the mathematical works. In 1739 he published the first volume of a catalogue of the Greek MSS., in the royal library, illustrated with notes, indexes, and apparatus. A second volume was promised, but it never appeared.

The linguistic attainments of the librarian were frequently put in request by the government officials, and so valuable were they found, that on the 21st of February, 1740, he was appointed official librarian to the city of Tenerife, and, forty years later, to the city of Santa Cruz. The secretory observed in a ministerial cabinet renders it impossible to learn with certainty the exact qualifications he showed himself to be possessed of for this office; but in the whole twenty-nine years that he continued to fill it, he enjoyed a high reputation among Spanish statesmen for method, punctuality, and severity of integrity.

The laborious duties of the librarian and official processing of materials, which represents the Fall of Man. It is a very old picture, and attributed to Van Eyck, but this seems doubtful. A flat stone in the cathedral covers the grave of Cornelius Jansen, founder of the sect of the Jansenists, who was bishop of Ypres in 1665.

Hassel, Handbuch; Handbook of Holland, Belgium, etc.; Stein, Geography, Lexicon.)

The general public hardly knew, the time how distinguished a benefactor of human knowledge was thus treated: it is now only to be wished that at least the course he took has been as defensible as the steps of others. As the time went on, his paintings and those of his daughter were as little known as they were. It is to be hoped that the examination of his remains will be made without delay, as it is frequently found that his hints are far from being exhausted. The points which should be most prominent in a general recapitulation, are the amount and nature of his works, the class of his publications, and their value. The views are now generally adopted, and been much enlarged.

Young's writings are numerous, and we have no means of ascertaining their number, and during the first forty years which he devoted to this purpose, the labours of his life were not without profit. He was a man of great scientific acquirements, and had acquired a knowledge of the principal languages of the world. He was a man of great scientific acquirements, and had acquired a knowledge of the principal languages of the world. He was a man of great scientific acquirements, and had acquired a knowledge of the principal languages of the world. He was a man of great scientific acquirements, and had acquired a knowledge of the principal languages of the world. He was a man of great scientific acquirements, and had acquired a knowledge of the principal languages of the world. He was a man of great scientific acquirements, and had acquired a knowledge of the principal languages of the world.
later did not occupy the whole time of Yriarte. In 1743 he was elected a member of the Royal Academy, and continued till his death to take an active part in its labours. The chief labour of devising an improved system of orthography, punctuation, and accentuation for the Spanish language fell upon Yriarte: he was ordered by the king to compile a Spanish Latin Dictionary, in which however he proceeded no further than the letter A; and he published a Latin grammar in Castilian verse. He had also a hand in revising and improving the "Hispania Nova" of Nicolas Antonio, and the "Biblioteca Arabica-Hispana Escrita" of Oviedo, and composed for the Royal Academy, or for the translation of Martial's, and of occasional verses both in Latin and Spanish, was published by subscription after his death.

Juan Yriarte died at Madrid, on the 23rd of August, 1771, in the sixty-ninth year of his age. In addition to the works already mentioned, he left in MS. "Historia de las Islas de Canarias," and "Palografia Griega." He also contributed largely to the "Diario de los Literatos de España." Three brothers of the name of Yriarte, nephews of Don Juan, had distinguished themselves in the public service, and in the literature of their country, but the materials for their biography are very scanty. We have been unable to ascertain even the baptismal name of their father, but as they appear to have been all born in Teneriffe, it is probable that their parents were natives of that island, as the prosperous fortunes of Juan de Yriarte induced his nephews to try their fortune in the mother-country.

Bernardo, the eldest, appears to have been born about 1702. He was a member of the Council of State, and of the Council of the Indies, and was created a knight of the order of Charles III. He was a member of the Royal Academy of St. Ferdinand, and nominated its patron by Charles IV. in March, 1792. When the French took Madrid, in 1808, Bernardo Yriarte was appointed a Councillor of State by Joseph Bonaparte. On the return of Ferdinand VII., Yriarte fled to France, and died at Bordeaux, on the 11th of July, 1814.

Domingo, the second brother, was born in 1746, and entered the diplomatic service at an early age. When he had a prolonged residence, first at Vienna, and then at Paris, as secretary to the embassy and chargé d'affaires, he was sent as minister plenipotentiary to the king and republic of Poland. On the 22nd of July, 1795, he signed, along with the French ministers, and the Peace of the year II., he became king of Spain and the French republic. Returning thence to Spain in bad health, he died at Girona, on the 22nd of November of the same year. Just before he had been appointed ambassador to France.

Tomás, the youngest, but most distinguished of the brothers, was born about 1750. Under the direction of his uncle Jean he made rapid progress in the antient and modern languages, and was appointed chief archivist in the office of the principal secretary of state. This appointment left him ample leisure for literary pursuits, and the approbation which his first essays met with procured for him the editorship of the "Madrid Mercuryo." This journal, which was previously little more than a translation of the same name," became in his hands a useful and amusing publication.

In 1769 a new theatre was opened in Madrid; and in the course of that and the three succeeding years a number of translations from the French drama by Yriarte were performed on its boards. In 1778 an original comedy by Yriarte, "El Señorito mimado," (The Spoiled Child), was favourably received by the Madrid public. In 1779 a poem in five books, entitled "Los Poetas," and one in hexameters of Yriarte: it was upon this work and his fables that his reputation is most likely to rest. "La Musica" has run through five editions, and has been translated into most European languages. In 1781 he was a competitor for the prize awarded to the best work of the Spanish Academy, but the poem on June Melenz Valdez was preferred. Yriarte vented his spleen in a severe criticism of his rival's work in the "Mercuryo." "Fabulas Literarias" was published in 1792. Of these fables Foster remarks that their style is pure, and their versification elegant, and that they are characterised by a graceful naiveté that reminds the reader of Fontene, but without conveying any suspicion of imitation. In addition to these works Yriarte published epistles in verse, notes, critical miscellanies, a translation in verse of the four first books of the "Aeneid," and of Homer's "Iliad" and "Odyssey." He published a collection of his works in 1785, and an enlarged edition. His taste for French literature, or some other cause, occasioned suspension of his orthodoxy; in 1786 he was subjected to an examination by the Inquisition, and his replies were so little satisfactory, that he was laid under a close arrest until the trial. Finally, after 26 years of imprisonment, he was tried, and found guilty of high treason, and sentenced to death. He did, however, survive: he was attacked by epilepsy, and died of an inflammatory attack in 1809 or 1811.

Avenzoar, a Yriarte, who was born in Biscay, in 1635, and who died at Seville in 1658, was considered the best landscape-painter of his age.

Francisco Diego de Ainsay Yriarte, a native of Huesca, published, in 1712, "Translation of the Kings of Canaria, San Gregorio, Obispo de Aux," and in 1716, "Pinsei Yriarte, Grandes, &c., de la antiquissima Oda de Huesca." Antonio mentions that he was master of the grammar-school of Huesca, and died young, but without mentioning the year of his death.

Ainsay de la Vida y Labor de Don Juan y Yriarte prefixed to the collection of his works published in Madrid in 1774; the "Prefaces to the Collected Works of Tomas de Yriarte" published at Madrid in 1787; and the "Bibliotheca Hispanica Mexicana," by Pigon, published in 1819, and in the notice of the Life of Tomas de Yriarte, in the "Biografias Literarias," neither of which we have seen.

YRIEIX, St. [Vienna, Hauke.]
YRIEIX, Count [Hauke.]
YSTAD, [Sweden.]
YTTRIA. [Ytrrium.]
Ytttrium, a peculiar metal discovered in the earth's crust in the E style. The ore, which is found in Sweden, was first called ytterby, and afterwards soldilone, by name it is now generally known. The metal was separated by Wohler from the oxide, by first reducing it to the metal, and then decomposing it into water and yttric oxide. The oxide is a small brilliant scale, having a perfect metallic lustre; it is a bright blackish powder, composed of small metallic scales. This oxide has a great affinity for oxygen; it is red in colour, and its composition is yttric oxide, and oxygen, as the air, takes fire, burns with much splendour, and is converted into yttria. Yttria dissolves in dilute nitric acid, with the evolution of hydrogen; when immersed in a solution of potash, it decomposes water, and emits oxygen gas, without rapidity.

We shall now briefly describe the minerals which contain yttrium, or rather its oxide, yttria.

Gadolinite.—Occurs crystalline and massive. Forms an oblique rhombic prism. Cleavage imperfect, with a distinct fracture, and a conchoidal, sometimes splintery. Hardness 6 to 7; colour greenish black, very dark. Streak greenish grey. Lustre vitreous, inclining to resinous.Opaque, transparent on the edges. Specific gravity 4-238.

Mineralogy....

Yttro-

Mallorca. [Ytrrium.]

Before the blowpipe it decomposes, if not heated, and does not melt except in small splinters. When heated with precaution on charcoal, it incandescence and gives off the oxide of yttrium. It is used in medicine for its nitric acid, and in gelatinising.

Gadolinite is found at Ytterby near Stockholm, and at other places in Sweden, and also in Greenland.

This mineral has been repeatedly analyzed, and was somewhat various, according to the process employed by Berg, Klápströ, and Vanquelin, without the detection of the oxide of cerium, which was found by Bertelius, who gave the following as the composition of the mineral from Brolsdo—Silica, 24-10; Yttria, 45-33; oxide of cerium, 16-90; oxide of iron, 11-94; muriatic acid, 9-80.
In a specimen from Karasjok, Berzelius found 2 per cent. of glucina, and rather more than 3 per cent. of lime. The following analyses, by (1) Mr. Connolly, (2) Des-Thomson and Steele, (3) Mr. Richardson, exhibit a much larger proportion of glucina than that obtained by Berzelius:—

<table>
<thead>
<tr>
<th>Silica</th>
<th>27-00</th>
<th>50-00</th>
<th>24-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ytttria</td>
<td>33-50</td>
<td>45-30</td>
<td>35-20</td>
</tr>
<tr>
<td>Oxide of cerium</td>
<td>14-33</td>
<td>4-33</td>
<td>0-40</td>
</tr>
<tr>
<td>Oxide of iron</td>
<td>14-50</td>
<td>13-50</td>
<td>14-50</td>
</tr>
<tr>
<td>Glucina</td>
<td>6-00</td>
<td>11-00</td>
<td>11-00</td>
</tr>
<tr>
<td>Manganes</td>
<td>-0-0</td>
<td>-0-0</td>
<td>-0-0</td>
</tr>
<tr>
<td>Lime</td>
<td>-0-0</td>
<td>-0-0</td>
<td>-0-0</td>
</tr>
<tr>
<td>Moisture</td>
<td>-0-0</td>
<td>-0-0</td>
<td>-0-0</td>
</tr>
</tbody>
</table>

Scheerer has more lately detected 475 per cent. of oxide of lanthanum in the gadolinite from Hitteron.


Columbite of Ytttria, &c. [Fergusonite.]

Titanate of Ytttria, &c. [Polygonite.]

Yttriochromite:—No trace of crystallization. It is found between felspar and the state of lamellae, sometimes in grains not exceeding the size of a pepper corn. The longitudinal fracture of the lamellae is foliated, the cross-fracture fine-grained, the surface vitreous in the fracture. Colour yellowish brown, accidentally with green spots or stripes. Streak white. Opalescence. Scratches glass with difficulty, but is very distinctly scratched by it. Specific gravity 4-387. The pale yellow color is characteristic of Yttrochromite.

Yttriochromite occurs with the preceding, commonly in thin laminae, schist in grains. Fracture conchoidal in one direction, fine-grained in another. Lustre intermediate between vitreous and resinous; Colour brownish black. Streak white. Very small fragments are translucent, almost colourless, sometimes a little yellowish. Hardness equal to that of the preceding.


Analysis of the above by Berzelius:—

<table>
<thead>
<tr>
<th>Yttriochromite</th>
<th>Volta</th>
<th>Brown</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columbite acid</td>
<td>60-124</td>
<td>59-00</td>
<td>51-815</td>
</tr>
<tr>
<td>Tungstic acid</td>
<td>10-044</td>
<td>2-25</td>
<td>2-392</td>
</tr>
<tr>
<td>Yttria</td>
<td>20-780</td>
<td>29-90</td>
<td>38-515</td>
</tr>
<tr>
<td>Lime</td>
<td>0-00</td>
<td>3-29</td>
<td>3-111</td>
</tr>
<tr>
<td>Oxide of uranium</td>
<td>6-022</td>
<td>2-33</td>
<td>1-111</td>
</tr>
<tr>
<td>Oxide of iron</td>
<td>1-155</td>
<td>2-72</td>
<td>0-555</td>
</tr>
<tr>
<td>Total</td>
<td>99-295</td>
<td>99-99</td>
<td>97-948</td>
</tr>
</tbody>
</table>

Before the blow-pipe they are all insufiable per se, but decrapturate and acquire a lighter colour. They are not acted upon by acids.

The above minerals all occur at Ytterby, and in the neighbourhood of Fahlum in Sweden.

P. C., No. 1770.

Having described the properties of yttrium and the minerals from which it is obtained, we shall briefly state the nature of some of the compounds.

Oxide of Ytttrium; Ytttria.—This compound, usually placed among the earths, is the only known compound of the elements of which it consists; and it exists as such combined with other earths and acids in the minerals above described. The properties of yttria,—that it is colourless, insipid, insoluble in water, and insufiable;—it is heavier than barytes, its specific gravity being 4-842;—it is perfectly insoluble in the caustic alkalis, but the alkaline carbonates, and especially carbonate of ammonia, dissolve it, and it is precipitated in solution by the ferric hydroxide of potassium. It has no action on vegetable colours.

It appears to consist of—

One equivalent of oxygen | 8
One equivalent of yttrium | 32

Equivalent | 40

It is the only oxide of yttrium known.

Chloride of Ytttrium is obtained by passing dry chlorine gas over a mixture of yttria and charcoal, heated to reduce the metal. It has the form of white brilliant needles, which easily melt into a crystalline mass. It is white, dissolves in water with the extraction of much heat, and speedily dissolves in the air. When yttrium is heated in chlorine gas, it burns, and the result is also chloride of yttrium.

Sulphate of Ytttrium is formed when the metal is heated in the vapour of sulphur; the resulting compound is of a grey colour, and is insoluble in water, but is decomposed by acids with the evolution of sulphured hydrogen gas.

Phosphuret of Ytttrium is obtained when the metal is heated in the vapour of phosphorus; combustion ensues, and the compound formed is of a greyish black colour, which, when put into water, gives out phosphuretted hydrogen gas.

Yttria and Acids combine to form salts of yttria.

Sulphate of Ytttria crystallizes readily. The crystals are colourless; they dissolve with remarkable slowness in water, which is however capable of taking up about 1-50th of its weight. When strongly heated, sulphate of yttria is decomposed, the whole of the acid being expelled.

Nitrate of Ytttria is obtained by the spontaneous evaporation of a solution of the salt; the crystals are colourless and extremely deliquescent.

Carbonate of Ytttria is a white flocculent precipitate, which is slightly soluble in the containing carbonic acid.

The properties of the salts of yttria are,—that their taste is astrangent and sweet; their density is greater than that of most earthy salts, and, unlike most salts of this kind, they are precipitated by ferric nitrates and potash, and potash produces white precipitates in them, which an excess does not redissolve; but the carbonated alkalies, and especially that of ammonia, redissolve the precipitate at first formed, when added in considerable excess.

The peninsula of Yucatan is surrounded on the west and north by the Gulf of Mexico, and on the east by that portion of the Caribbean Sea which is known by the name of the Gulf of Honduras. The republic of Yucatan borders on the south-east on the English settlement of Honduras and Balize, but the boundary-line between them has never been defined, nor is it necessary for the present, as it runs through a country which is never visited by civilized beings, or perhaps not inhabited by a native tribe. The same observation applies to the southern boundary-line of Yucatan, which it borders on Guatemala, the most northern state of Central America. This line passes through a country inhabited by a native tribe called the Lacandones, who avoid all communication with European settlers, do not admit foreigners among them. It is supposed that the boundary-line is formed partly by the course of the river S. Pedro, a tributary of the Mexican.
course of this river is very imperfectly known. On the south-west of Yucatan are the Mexican states of Chiapa and Tabasco, and here it is supposed that the boundary is not exactly fixed. It is partly formed by the river Usumacinta, but lies mainly between the principal branch of that river and its arm which is called Palisada. It seems to terminate on the shores of the Gulf of Mexico, at the Heads of St. Gabriel (near 10° 10' W. long.).

Coast and Harbours.—From the extreme extremity of the Heads of St. Gabriel a low, swampy, and wooded shore extends to the western entrance of the Laguna de Terminos. The Laguna is about 60 miles long from west to east, and more than a mile wide on an average. It contains several large rivers, among which are the Rio Palisada and the Pacaicata or Bateac, its waters are salt only in the dry season, and hardly brackish in the wet season. It seems to be deep enough for the largest vessels, and it is only nine fathoms deep from 15 to 30 tons, which are also flat-bottomed on account of the shoals at the mouth of the Rio Palisada, as the country contiguous to the banks of that river alone yields any article of commerce. The trade of the port is small. The present year, the season, and even the dry season is partly occupied by lagoons and swamps. The greater part of it is overgrown by low bushes. This low tract extends eighteen miles inland, at the back of the town of Sisal, so that a causeway has been made across the lagoon from Sisal to the capital of the republic. The port of Sisal is only an open roadstead, and large vessels are obliged to anchor more than two miles from the shore. It would seem that along this coast as far east as 81° W. long., good anchorage is always found for vessels of between 100 and 300 tons, which are of the usual Spanish type, rising in height about 10 feet above the sea, and at a few places higher. These hills are partly overgrown with bushes. A series of such hills forms a tongue of land, which separates a narrow arm or channel called Rio Lagartos from the main body of the sea. It does not appear that this narrow sea is navigable, nor is it stated whether there is safe anchorage along this coast west of Cape Catoche. In approaching this cape the sandhills disappear, and ships are covered with swamps and cut up by long lagoons. But in this part the low tract is overgrown with trees rising to 150 feet. The cape itself is low and lined by a line of sandhills, which are partly covered with high trees. The distance between this cape and Cabo de S. Antonio in Cuba, where is the strait which connects the Gulf of Mexico with the Caribbean Sea, is nearly 150 miles.

The eastern coast of the peninsula from Cape Catoche to 20° 15' N. lat. is well defined, and not quite so low and swampy. At some places there are sand-hills 20 feet high, which are here and there clothed with stunted bushes. At other places there is a sandy beach, backed by level ground thickly covered with trees attaining a height of 50 to 100 feet in range.
high hills, and where it has been crossed by travellers it is about 10 miles wide. The soil of this region is generally thin, and of moderate fertility; but it produces nearly all the grains, fruits, and plants which are cultivated in the West Indies, by means of which the produce of the soil is sold in the market towns. The water is drawn by machinery from the tanks or canals, and spread over the adjacent country. But as only a comparatively small portion of the country can be irrigated, the larger portion lies waste, and is overgrown by stunted trees, trees not being deep enough for the growth of large trees. The lower tracts in the depressions, which preserve a growth of grass during the greater part of the dry season, are used as pasture-grounds for cattle.

The southern part of Yucatan exhibits a different character. We became acquainted with a small portion of this region, the interior having never been visited by travellers or settlers of European origin. We know only the tract bordering on the two gulfs. The country bordering on the Gulf of Mexico, and containing the largest part of the Peninsula of Yucatan, is very productive of fruits and vegetables. There are some plantations of cacao and sugar. Vanilla and indigo are stated to be common in the woods, which cover the whole plain; the woods consist of large trees, among which the logwood is very abundant. The wood consumed in Europe and America is brought from these forests. The unhealthiness of this tract is attributed to the great abundance of water, and the great heat in summer. It is not known how far this low country extends eastward; but it is stated that about 30 miles from the Laguna de Terminos, the rivers of S. Pedro and of Pacaitun are united by a natural canal running nearly north and south, and it is probable that this natural canal occurs where the country begins to rise gradually. The country on the shores of the Gulf of Honduras and surrounding Ambergis Bay is similar in its natural features, its fertility, and productions, but it does not appear to be so generally subject to inundation, and it is less unhealthy.

Rivers.—The lower course of the Usamantla [Mexican States, vol. iv., p. 150] touches the southern boundary of Yucatan, and sends off one of its arms, the Rio Pialada, which traverses the plain, and, after a course of about 100 miles, reaches the sea. Its chief streams are the Maracaibo and the Macay. This river is about 200 yards wide, and deep enough for large vessels, but at its mouth there are extensive shoals, which oblige the inhabitants to use flat-bottomed river barges or bungos of from 15 to 20 tons. The Piaulata or Macay, and outstanding, is navigable to a considerable extent, but it is not navigated, as there appear to be no agricultural settlements on its banks. It runs westward, and falls into the eastern part of the Laguna de Terminos. The Champon River, which falls into the Gulf of Mexico, is navigable from the city of Pina to the cultivation of the land. The nature of the country has introduced a peculiar kind of servitude, which is not found anywhere else. Where the sotanos, or natural wells, are numerous, and yield an abundant supply of water, the aborigines are independent, and as it does not appear that the whites have acquired any exclusive right to these wells. But in other parts of the country, where such wells are rare or wanting, men and beasts would perish in the dry season if no care were taken for the preservation of them. Hence the proprietors have constructed on each of their numerous estates large tanks and reservoirs at great expense, as they are frequently more than a hundred feet deep; and this creates a relation with the Indian population which places the proprietor somewhat in the position of a lord under the old feudal system. The Mayas are obliged to attach themselves to some estate which can supply their want of water; and in return for the privilege of using the tanks, they come under certain obligations of service to the master. The Mayas attached to such estates are of small classes.
The aborigines of Yucatan had made considerable progress in civilization when the Spaniards arrived there in 1517. They wore cotton dresses, and lived in houses built of stone. It cannot yet be determined if the ruins of those extensive and magnificent buildings which have lately been discovered in several parts of the country, were erected by the race which still inhabits the country, or by a more ancient one which has become extinct. The most remarkable and best preserved of the ruins which, up to 1842, have been discovered, are situated at Uxmal, about 12 miles from Merida, and at Chichen, about 12 miles west of Valladolid. The present generation does not appear to be inferior in civilization to their ancestors at the time of the arrival of the Spaniards. They still live in houses built of stone, and wear a decent cotton dress.

Manufactures.—The cotton-cloth generally worn by the Indians and lower classes of whites was, till lately, only made in the families, but recently a cotton-cloth, with steam-engines has been established at Valladolid. Other manufactures do not exist. In some places the Mayas make hats from the leaf of a palm, which are exported to the neighbouring countries from Campeachy, and in the United States are known as Campeachy hats. Sackcloth made by the country-people is exported.

Commerce.—The commerce of Yucatan is of very limited extent. None of its agricultural products yield articles of export, except the Sisal hemp. The manufactured articles are Cottons, calicos, and sackcloth. The most important of these articles are derived from the forests, as logwood, deer-skies, wax, and honey. The imports consist chiefly of English and French manufactured goods, and spices brought from the East Indies.

Vulcanos.—The Yucatanos have shown some taste for literary pursuits. There are two colleges; one at Merida, called Minerva College, and another in Campeachy. The latter has six professors, and in 1842 there were 55 students, besides 13 more who were on the foundation. There are also schools for the lower classes, but we are not acquainted with their condition.

Political Divisions and Towns.—Yucatan is divided into five departments and eighteen districts, and contains 236 towns.

The capital, the city of the Indians, which is the north-west of the city, and is the seat of the government of the republic. It is about 25 feet above the sea-level, and built upon the ruins of an Indian town, which was destroyed by the Spanish. The streets are narrow, and laid out at right angles to one another. The side-walks are four feet wide, and paved with rough stone. The houses are well built of stone, and uniform in their appearance. The roofs are flat and the exterior finished with stucco. The middle of the streets is lowest, forming a passage to carry off the water. After heavy rains the streets are flooded to the edge of the walks, and for some hours nearly impassable. There are five fine squares, the principal of which is in the centre of the town, and surrounded by the cathedral, the bishop's palace, government house, and the dwellings of the wealthiest citizens. The cathedral is a vast structure, and built in the best style of the sixteenth century. There are also thirteen other churches within the city and the suburbs, and they are in general well built. None of the other public buildings are remarkable.

The population is about 20,000 individuals, the majority of whom are Indians and half-breeds. Still about 1000 inhabitants, almost all Indians: from this post are exported hemp, sackcloth, ox-hides, deer-skins, etc.

Valladolid is a considerable town in the interior, with more than 15,000 inhabitants. In the district north of the place the best cotton is grown, and lately (1841) a cotton manufacture has been established. It has a very beautiful cathedral. The climate is considered the healthiest in Yucatan.

Campeachy, on the Gulf of Mexico, is entirely built of calcareous stone, and stands upon a foundation of the same substance, which contains subterranean caverns of great extent. It is one of the most remarkable towns in Yucatan. Probably they owe their existence to the building materials which have been got from them. The streets are narrow and irregular, and have the usual appearance of those of Merida. Most of the houses are of one story.

Campeachy exports large quantities of logwood, wax, honey, and a number of vessels are built here, among a few, is the largest keel. A handsome playhouse has lately been erected.

In the interior are several other towns, containing from 3000 to 10,000 inhabitants, among which are Manta, Silax, and Zilbacchen. The last-mentioned place is the capital of the state of Campeachy, and the United States are known as Campeachy hats. Sackcloth made by the country-people is exported.

Where the boundary-lines of Yucatan, Guatamala, and the British colony of Belize are supposed to meet, there is a large tract, probably exceeding 30,000 square miles, almost a continent, and within which there is but one town that is inhabited, and, according to some reports, it is populous. The inhabitants are known by the name of Lacandones, and are stated to assist all intruders upon their neighbours, except that sometimes they bring them presents of curiosities, and the quality, and is grown by them to a great extent. Some persons assert that they have seen in this country, during a great distance, a very large and well-built town, and it is supposed by some travellers that when the Spaniards first tried to cross the country they were within a town of immense buildings have been erected which occur in Yucatan, and the ruins of which have lately excited so much surprise.

History.—The Spanish historians mention, that about a hundred years before their arrival, about 1429, a political revolution had taken place in Yucatan, in which the town of Mayapan was destroyed. One of the causes of this revolution is mentioned as the head of the province of Chi-che-ira, a name which is still applied to one of the most interesting and extensive groups of ruins. Yucatan was discovered in 1517, by Hernandez Cordova, who had been sent by Velasquez, the governor of Cuba, for the purpose of making discoveries. He sailed from Cape Hatteras to the vicinity of the Laguna, de Timins, and landed twice; he found the inhabitants were civilized, but warring. In the following year Juan de Grijalva, following his first arrival at the island of Cozumel, whence he sailed, the peninsula and along the eastern coast of Yucatan, for no good reason, and was killed. He also experienced the warfare disposition of the inhabitants. Cortes had subjected Mexico to the dominion of Spain, and sent, 1522, Bernal Diaz to conquer Yucatan, which he also accomplished, though not without an obstinate and prolonged resistance. Yucatan remained in the hands of Spain up to the time when the Mexican States acquired their independence. Nor did it experience the evils of internal warfare during the protracted struggle between the mother-country and the colonies (from 1810 to 1821) that ensued. It was always adherent to the government established in Mexico, and formed an
independence had been obtained, one of the states in the Mexican Federation. In 1835 the federal government in Mexico was, exchanged into a central government. This created much discontent in those persons who had some suspicion of governing the states of which they were citizens, and they constituted a party called the Federalists. For some time they tried only to influence the choice of representatives to Congress, but not succeeding, they began to agitate, and they succeeded in Yucatán. In 1839 the Santiago Iman, a militia captain, set up the standard of revolt in Tizimín, a small town in the interior of Yucatán, and proclaimed the Federal Constitution of 1824: he attacked the large haciendas, and was more generously afterwards driven from Tizimín. But he soon reoccupied the place, and gained the favour of the Maya Indians by offering them a discharge for the future from the contributions which they had to pay. The Indian problem was already becoming acute in the neighboring republic of Central America the aborigines, under the conduct of an Indian, Carrera, had begun a successful war against the president of the republic, Morazán, and, with the help of the federal government, had seized the port of Tizimín. The most important town of the Yucatecan coast, which was abandoned by the French in consequence of the defeat of General Iturbide, had now been captured by the federal troops. Yucatán was, for a time, a free state. The government troops sent against them were at first successful, but in the beginning of 1840 he succeeded in taking the important city of Valladolid. After this event Merida and the other towns submitted. In the summer of 1840 this state was again conquered, and the state of Yucatán, after the capitulation of 1824. Nothing was left but Campeche, the head-quarters of the Mexican general Rivas, with a garrison of 10,000 men. This place was besieged, and surrendered at the mouth of June, 1840. In 1841 the legislature declared the republic of Yucatán, which adopted a new constitution, which does not materially differ from the former one. The legislature consists of two houses, a senate and a house of representatives, and at the head of the executive is a governor. It is very probable that this city will remain in the hands of the federal government, which has the most powerful army in the country which lies between it and the other states of the Mexican confederation. It is the plain of Tabasco, a watery place, very thinly inhabited and extremely unhealthy all the year round. The attempt to cross this plain with an army was an almost fatal destruction to the army by disease. To invade the country by sea would require a much larger navy than the Mexican republic has at its disposal. It is however to be feared that the Indians, who compose four-fifths of the population, and by whose assistance the revolution has been effected, will turn their arms against the whites, though the latter for the present have avoided such an event by readily acceding to the revolution.

Y. lortetii, Allan's Adam's-Needle, has linear-lanceolate, even, straight leaves, with the edges bordered by fine callous notches. This plant is a native of North and South America. It was introduced into English and Dutch gardens a century since, where it is treated as a greenhouse plant. Its leaves are straight, and narrower and stiffer than those of the last. The panicle is also more dense and cylindrical. The flowers are white, and externally tinged with purple. It very seldom flowers in this country; and when this event takes place, the plant becomes branched, and, as it grows older, it is more and more thorny. Y. draconis, Drooping-leaved Adam's-Needle: the leaves linear-lanceolate, even, reflexed, crenate; the segments of the corolla spreading, somewhat recurved. This plant is very rare by Mr. Alton to be a native of South Carolina, where it flowers in October and November. The flowers are larger than in the last species, and are an inch broad and above two feet long. Clusius says that the Indians use the fibres of these leaves for the purpose of making a fine cord. These compositions of the rafter's of their huts together. Y. filamentosus, Thready Adam's-Needle: stemless, with lanceolate entire leaves, coarsely filamentosus at the edges. It is found on the shores of Virginia and Carolina, and is said to develop the finest fibres for the purpose of plaiting in this country, and blossoms in the autumn. Its flowers are panicle and pendulous, and of a cream colour. The leaves have their edges beset with long recurved threads. In the cultivation of these plants, they may be all propagated by offsets which are easily detached from the parent plant at any time during the spring and summer season. They should be laid aside in a dry place, for the wound caused by their separation to be healed; and when this is effected, they should be planted out separately and kept in compost till they have rooting. When propagated by seeds, those from abroad should alone be employed. The seed should be sown in spring in pots of light earth, which should be placed in a hot-bed, when the plants are soon up. When the plants have formed their first leaf, they should be placed out in pots of light sandy mould, and still kept in the hot-bed, but hardening them by degrees to the open air, to which they may be exposed from June till October, when they should be hardened off for the winter. They should occasionally have moderate waterings.

(Sir J. E. Smith, in Reece's Cyclopædia; Burnett's Outlines of Botany.)

YVERDUN. [Wayneck.]

YVERDUN, a town of the Canton de Vaud in Switzerland, situated at the south-western extremity of the lake of Neuchâtel, which is sometimes called the lake of Yver dun, where the river Orbe, called also Thicle, enters the lake. Yverdun is the capital of the district of the Canton de Vaud, and is the head of a district containing thirty-eight communes and about 12,400 inhabitants. The town of Yverdun had, in 1837, 3460 inhabitants, including its 'banlieue,' or communal territory. The town is well built, the streets are wide and regular, and there are some very fine promenades on the banks of the lake. Many families in easy circumstances reside at Yverdun, and the town carries on a considerable trade in cattle and agricultural produce. Fair held at Yverdun; steam-boat plies between Yverdun, Neuchâtel, and Bienne. Yverdun acquired a sort of celebrity in the early part of the present century in consequence of the institution for education, directed by Pestalozzi, which was established here in 1805. After removing to Buchsee, Pestalozzi became connected with Fellenberg, whose attention was also turned to the subject of popular education. [Horw.] In 1805 Pestalozzi removed his establishment to Yverdun, the town being him the use of an old castle, where he developed his peculiar system of elementary education, which has been the subject of much inquiry and much discussion. For information concerning Pestalozzi's system, or method, as he called it, we must refer the reader to the works written by himself, or 'Exposé de la Méthode élémentaire de H. Pestalozzi, suivi d'une notice sur les travaux de cet homme célèbre, son institut, et ses principaux collaborateurs,' by D. A.
Z.  

Z, like Y, was only found in the later Roman alphabet, XIX, from which it has been transferred to the alphabets of Western Europe. In the Greek series of letters it occupied the seventh place, the sixth being the property of the subsequently dismissed Vav or F. Two questions then arise which deserve an answer: how was it that the Greek alphabet was not completed by the addition of Z? And why was the Greek letter not supplanted by the Greek letter, if we account for the Latin letter G occupying the place which should have been given to Z? We would first observe that the Greeks were surrounded on the north by Slavonic races, with whom an abundance of z's has always been in favour, so that the early position in the alphabet of Z need surprise no one. In the second place, we strongly suspect that the genuine sound of the Greek Z in early times was not, as is sometimes stated, that of ad or de, but would be explained. For instance, the form Zeus in the Iliad would not surprise us, the long-sides of either Διος or Τιτανος, &c., or of the Italian Giove. [D; J.] Next looking to the Roman alphabet we are disposed to contend that the character G, which occupies the same position, is the same power, and that it was not the equivalent of the Greek Ν, for the second letter of the Roman alphabet, C, as it derived its form from the Greek Κ, merely changing its angle into a curve a change not unknown to the Greeks themselves, see the tables of the old Greek character under Alphabet. Its power was precisely the same, a fact for which we have abundant testimony among the Romans themselves.

C.] Ausonius, for instance, says, 'Prisim vice Gammme unccta est.' But if G originally represented a sound different from that of the Greek K, it is not likely to have belonged to it than that of our English J, when we know that the sound is still current in Italy, although they want a single character to represent it, and, secondly, when it is an undoubted fact that the two sounds are very apt to be interchanged. In our own tongue the very letter in question performs the two offices we are speaking of, in gender and get, even before the same vowel; and we once met with a child already ten years of age, whose ear and tongue could make no distinction between the two sounds of di before a vowel, of an English J, and of our initial y, are closely related. Those who read the ballads in Percy's 'Religions' will find many words where a z is heard; thus Menzies is pronounced Mingies. But if the Latin G and the Greek Z had originally the same power, as well as the same place in the alphabetical series, it becomes difficult to believe that the G alone of all the Latin letters did not derive its form from the Greek symbol. Now is the change so violent as would at first appear. If the Greek Z were written with its oblique shaft from north-west to south-east instead of from north-east to south-west (a supposition having little difficulty in it, if letters were originally pictorial), then the ordinary change from north-east to south-west would be accomplished. For the very near the true Roman G, which at times was not like the Arabic numeral 2, supposing it to look the other way. [Alphabet, p. 584, pl. iv., col. 6.] The permutations to which Z, liable have partly been shown above, and all of them are to be accounted for by a change from north-east to south-west.
which the "Remonstrant" had met with induced Zachariae still published a series of epistles which we may mention "Phaeton," "Das Schnupftuch," "Murner in der Hölle," the last two of which are the best among them. In 1747 he went to Göttingen, where he formed connections with men of congenial minds. In the following year he was appointed professor at the gymnasium (Carolino) of Brunswick, and the beneficial influence he exercised there on the development of the talents and taste of his pupils induced the duke of Brunswick, in 1761, to appoint him professor of poetry at the Carolino. In addition to the duties of the earlier German in 1762, he received the presidency of the printing and publishing establishments connected with the orphan asylum (Waisenhaus) of Brunswick, and of the Brunswick "Intelligenzblatt," to which he himself contributed a series of interesting and useful papers. In 1763 he resigned the superintendency of those establishments, which had prospered very much under his management, and confined himself to the duties of his professorship. From 1768 to 1774 he edited the "Neue Braunschweiger Zeitung" (the New Brunswick Gazette), for which he himself wrote much poetry and reviews. He died on the 30th of January, 1777.

Zachariae was one of the best poets of his time, and in the comic epic he has scarcely been surpassed by any more recent German poets. He is less celebrated, however, as a poet. He also wrote a number of sonnets, in light and pleasing style, and he himself set many of them to music. He made a German translation of Milton's "Paradise Lost," in hexameter verse (Altona, 1760, 4to.), a second and considerably enlarged edition appeared in 1763; this translation is weak, and not always faithful to the original. His "Fabeln und Erzählungen in Burkard Waldia's Manier" belong to his best poetical productions. His style is clear, plain, and correct. For the purpose of promoting the study of the German language, Zachariae began to publish a collection of the best specimens of the best German poets of the time of Opitz ("Auserlesene Stücke der besten Deutschen Dichter von Opitz bis auf gegenwärtige Zeiten," Brunswick, 1766-71, 2 vols. 8vo.). The number of this work was continued by Eschenburg, who published a third volume (1778, 8vo.). The first complete collection of Zachariae's works appeared at Brunswick, 1769-73, 5 vols. 8vo.). A second and cheaper edition, in which the translations from foreign languages are omitted, was published in 1772, in 2 vols. 8vo., and was reprinted in 1777. After his death, Eschenburg published a supplementary volume, which also contains a Life of Zachariae.

ZACHARIAS, KARL SALOMON, a celebrated German jurist and political writer, was born at Meißen, on the 14th of November, 1702, and received his early education in the great public school (Fürstenschule) of his native place. In 1727 he went to the university of Leipzig, where at first he devoted himself almost exclusively to philological and philosophical studies, but afterwards he took up the study of jurisprudence. He left Leipzig in the spring of 1729, and, being recommended by persons of distinction, he obtained the situation of tutor to the young Count Lippe, whom he accompanied to the university of Wittenberg, where he continued his studies for two years more, and when the count returned, he followed him over his grief-paid career. Zachariae, in 1735, carried into effect his favourite plan of becoming an academical teacher. He had not been privyadvocate for more than two years before he was appointed professor extraordinary, and in 1702 he was raised to the ordinary professorship in the university of Wittenberg. He had distinguished himself as an author long before this time, and had acquired considerable reputation as a philosophical and political writer. In 1743 he received an invitation to a professorship in the university of Heidelberg, which he accepted because in his situation at Wittenberg his leisure time was almost wholly occupied with the practical administration of justice, which formed part of his office, and thus he had little time left for literary pursuits. At Heidelberg, he lectured on law in all its departments, among which we may mention the public law of Germany, canon law, feudal law, and comparative jurisprudence. He always treated his subject in a philosophical spirit. His merits were rewarded by the title of Geheimer Rat of the grand-duchy of Baden, and in 1746 he was drawn away from his scientific and literary labours by the desire to throw more power into the hands of the government than we are enabled to judge of him, he was a liberal reformer with a strong leaning towards aristocratic principles. For this reason, during these years, he received two very honourable invitations, the one to Göttingen and the other to Leipzig, both of which he declined. He remained at Heidelberg until his death on the 27th of March, 1843, having shortly before been offered the rank of professor under the name of Knight von Lingenthal. Zachariae was one of the ablest of all philosophers, and few continental men have possessed so comprehensive knowledge of the legal and political nature of the various states of Germany and Europe as he did.

The following list contains his principal works:

1. "Handbuch des Kurfürstlichen Lehrrechts," Leipzig, 1786, 8vo.; a second edition was published by Ch. Z. Warschauer and P. A. Lessing, 1790, 8vo., entitled "Handbuch der Staats- und Kirchen Rechts," Leipzig, 1797, 8vo.; a sort of appendix to this work is his "Nachtrag über die evangelischen Brüdergemeinen," Leipzig, 1788, 8vo. 3. "Handbuch zu Französischen Civilrechts," of which the third edition appeared in 1795; also an "Handbuch zu den Büchern vom Staate," Stuttgart, 1820-22, 5 vols. 8vo.; a new and much enlarged edition of this work was begun in 1839, and completed in 1843, in 7 vols. 8vo.; it is the best work on political philosophy in the German language.

2. "Antheologie," 1762, 8vo.; a treatise on the duties of the modern Freistaaten, Heidelberg, 1834, in two parts, 8vo.; a very admirable treatise, the only fault of which is, that it assigns greater merit to the political men of Sully than they deserve. He also contributed valuable articles to the "Dictionary of the⊅jointly with Mittermayer, entitled ‘Kritische Zeitschrift zu Rechtswissenschaft und Gesetzgebung des Auslandes’ to the ‘Heidelberger Jahrbiicher.’"

(Brockhaus, Conversations Lexikon; Gersdorff Leipzig, genus jurisprudentialis fof 1812, p. 39.)

ZACHARIAS. (ZACHARIAH.)

ZACHARIAS, a native of Greece, succeeded Gregory III. in the see of Rome, a.d. 741. Liutprand, king of the Lombards, was then at the height of his power in Rome, in consequence of the support which the Roman and Pope Gregory had given to Trasmund, duke of Spoleto, and Gotteschall, duke of Beneventum, who revolted against Liutprand. Zachariah took a dispassionate view of their conduct, and his works appealed to Stephen, who was duke of Rome, and with the lessons of that city, to induce them to give up the alliance of the rebellious dukes, and to send messengers to Liutprand to sue for peace, which Liutprand willingly granted. D. Romano then joined their militia with the troops of Liutprand, who invaded the duchy of Spoleto, and obliged Trasmund to surrender to the king, who ordered him to take clerical orders, and appointed Anspurad in his place. Zacharias, in his letters to King Liutprand, urged that as Trasmund had seized the duchy of Rome, which the king had seized during the former calamities, and as Liutprand delayed the restitution, Zachariah went to meet him at Terni, when the king received him with great honours, and not only restored the duchy of Spoleto, but, to the duchy of Beneventum, received him as a servant, and of the Roman see a patrimonium or estate in the Sabinium, and other estates in the districts of Ancona, Osimo, Numana, and other parts. The peace between the Longobards and the Romans was restored without rancour.

In the following year, 742, Liutprand attacked the exarch of Ravenna with a powerful force. The exarch was unable to make head against him, and appealed to the mediation of Zachariah. Zachariah proceeded to Ravenna, but in his absence wrote to Liutprand, announcing to him his intention to visit him in his own capital, Pavia. The novel office, in the relations between the pope and the king of the Lombards, and the ministers of Liutprand, was
oured to prevent its being carried into effect. Zacharias however proceeded to Pavia, where he was received by Luitprand with great respect, and, after some debate, the king yielded to the request of the pontiff, and restored to the Greek empire certain territories which he had seized upon the exarch. The pope then returned to Rome, being honourably escorted, by order of King Luitprand, as far as the Po. In the following year Luitprand died, and was succeeded by his nephew Hildebrand, who, being deposed after a few months for his ill conduct, Hatches, Duke of Milan, was proclaimed king, A.D. 1073, hastened to the king's camp, and succeeded not only in making him resist from his attack, but, by his exhortations and remonstrances about the vanity of earthly greatness, he made such an impression upon the king, that he was afterwards abdicated, and returned to Rome with his wife and daughter, where, at their own request, they received the monastic habit from the hands of the pope.

Latches retired to Monte Casino, and his wife and daughter with him, in a manner that is not recorded, and about the same time Carlemon, Duke of Austria, and second son of Charles Martel, renounced his office in favour of his brother Pepin, and proceeded to Rome, where he became a monk, and founded a convent on Mount Soracte.

In the year 751, Pepin, who had been sent to purchase Christian slaves in Italy, and even at Rome, whom they sold to the Saracens in the Levant, on account of their heavy ecclesiastical censures, and assumed many of those who had been sold, and restored them to their liberty.

About the year 750, Pepin, who governed France, with the title of Maire of the Palace, in the name of King Childeric III, sent ambassadors to Rome to represent to the pope that Childeric was unfit to reign, and had never been crowned, or invested with the regal robes, and it was impossible for him to have a king capable of managing the affairs of the state; and that the leading men of France wished to proclaim him, Pepin, as their king, if the pope would return to France. Pepin, on this occasion, left Childeric to Zacharias is said to have answered that it was meet that he who had already the real power and the government of the state should be king, upon which the Frankish leaders and nobles assembled in a general assembly deposed Childeric, and his heir, named Charles Martel, from the throne, and invested Pepin with the regal robes.

The abbot of Zacharias (for the abbot is certain, though he particulars of it are obscure) to this violent change of dynasty is the only questionable act that we know of this pope, who in other respects appears to have been a lover of justice and religion, as himself felt, until his conscience till he received absolutation from Stephen II., the successor of Zacharias, and was crowned again by him at Paris.

Pope Zacharias died in the year 752. He is said to have been very generous towards the clergy and the people of Rome; he repaired the Basilica of the Lateran, and built several churches. He translated into Greek the dialogues of Pope Gregory I., or the Great, for the benefit of his countrymen. His epistolary correspondence with Boniface, Archbishop of Mainz, is found in Henrici's "Collegii Concilia.

(Platina e Panvinio, Vite dei Pontefici; Muratori, Antichità d'Italia.)

ZACHRIEVEN, CORNELIUS and HERMAN, brothers.

Their name is sometimes written Sallieven. Cornelius was born at Rotterdam in 1600: he excelled in pictures of horses and soldiers, in the style of Teniers and Bruyaer. His scenes, which were always sketched from nature, are full of truth and character, but as paintings they want that brilliancy and transparence of colouring which distinguishes the works of many of his countrymen. He painted also landscapes, and made many spirited etchings after his own designs. Some of Cornelius's foregrounds are particularly clever, being groups of various utensils or implements, characteristic of the occupations of the characters of the picture. The year of his death is not known, according to the Dutch writers, but in Pickington's Dictionary 1673 is given.

Herman Zachielven was an excellent landscape-painter. He was born at Rotterdam in 1601, and was the pupil of J. Van Goyer; but he lived the greater part of his life at Utrecht, where he died in 1683. Herman's landscapes, which consist generally of views in the vicinity of Utrecht and of the Rhine, are distinguished by great transparency, from being coloured like those of Wolfaumen. His earliest pictures are such simple views of nature as the various sites afforded, but in his later works he generally selected various picturesque points, which he composed into one picture; he sometimes introduced many small figures into his works. Herman made nature in black chalk, which are much valued by collectors: he executed also a few spirited etchings. D'Arzensville says that Herman Zachielven visited Italy, and spent some years there, but very little is known of his life after any such visit, and still greater reason for supposing the statement to be incorrect is that there are no traces of Italy in any of his studies or pictures.

(Houbrouken, Groote Schouburg, S. ; D'Arvensville, Abbé de la Congrég. de l'Ordre te, Av. ; ZACYNTHIUS. [Zante]. ZAGROS, MOUNT. [Persia].) ZAHLLE [Syria, p. 472.]. ZAIDA [Syria, p. 472.].

Zahle is the largest river in Western Africa south of the equator. It is called by the natives Mosun Elarabli, that is, the Great River, or 'the river which absorbs all others.' The upper part of the river has not been visited by Europeans. According to the information obtained from the native traders and from the principal inhabitant of the Upper Zahle, the river flows from the south to the north; and its source is supposed to be in one or two degrees north of the line. But it is certain that another great branch originates in the interior far to the south-east from its mouth, and this branch is called Congo.

In the Middle Ages the term Zahle was applied to a branch of the Congo which is probably in general about 250 miles, from its embouchure in the Zaire to Captain Tuckey. At that distance from its mouth the river expands to the width of two, three, or even more than four miles, and flows with a current of two or three miles an hour. This upper part of the river enters an elevated country, which is probably more than 500 feet above the sea-level. The country is hilly, with the exception of some tracts of fine sandy beach, but the hills are of moderate elevation, and rise with a gentle ascent from the margin of the river. The villages are chiefly composed of small huts, with thatched roofs, and many rocky promontories of marble jet into the river. A considerable portion of the country is fit for cultivation on the summits and on the sides of the hills, as well as in the valleys. It is also much more inhabited than farther down, and villages are frequent. The current is far from being so luxuriant as is usual between the tropics, and the hills are frequently barren, and destitute of trees, which only occur in the ravines and round the larger villages.

The Zaire begins to descend from this upper terrace about 200 miles from its mouth. The bed of the river gradually narrows to a mile, and then it falls over the Upper Sangalla or rapid, which is formed by a ledge of rocks running across the river, under which the current runs with great force. The Zaire now begins to flow with great rapidity between high rocky masses. Ten miles lower down is the Lower Sangalla, where the river is crossed by a great ledge of slate rocks, which leave only a passage of half a mile across the river, which flows 200 yards wide, through which the stream runs at least eight miles an hour, forming whirlpools in the middle, whose vortices occupy at least half the breadth of the channel, and must be fatal to any canoe that should attempt to pass them. Below this rapid the river is filled with rocky islets; the great breadth, however, diminishes the velocity of the stream, so that canoes easily pass. About 15 miles below the Lower Sangalla begins the narrows, where the river, from more than a mile, suddenly contracts to less than half a mile, and in many places it is hardly 200 yards wide. (Vol. XXVII. 5 A.)
These Narrows are nearly 40 miles long, extending from Inga to Sondie Point. Though the bed of the river is narrow, it is generally full of rocks. Before the river leaves the Narrows it forms a cataract called Yellala, where the river descends over a bed of mixed slate, and falls about 30 feet perpendicular in a slope of three yards. A little above Sondie Point a ledge of rocks stretches from the northern shore about two-thirds the breadth of the river (which is here about half a mile wide), the current breaking furiously on it; but near the southern shore a smooth channel is left, with little or no velocity on the current, is the only obstacle to the ascent of boats. The tide is perceptible as far as Sondie Point, where it rises about six inches, and from this point the river begins to be navigable. Between the Upper Sangalla and Sondie Point the general course of the river is from north to south, and from Sondie Point to the sea nearly due west.

The country extending on both sides of the Zaire from the Upper Sangalla to Sondie Point rises considerably higher than the general level of the upper terrace. Contiguous to the river's bed there are high hills consisting chiefly of mixed slate. They are very steep, in many places precipitous, and destitute of all vegetation. In some spots, where the current has been turned aside by rocky points, the river has deposited its mud, and formed little islands which are covered with reeds. A small quantity of Indian corn is grown. The declivities of the rocky masses are intersected by several little valleys, which penetrate a few miles inland, and in which some plantations of manioc and Indian corn are met with, and many of the palms. The sides of the river, which in general appear to attain an elevation of 1500 feet above the sea-level, presents an uneven plain, in general destitute of trees, but having a soil sufficiently deep for the cultivation of the country's most valuable article, vegetable marrows. On this plain there are numerous small villages surrounded by mimosa, Adamsonia, and palm-trees. The soil is of a hard clayey nature, and is incapable of being worked in the dry season, but is sufficiently productive with manures, and by the heavy rains and with the aid of a heated atmosphere.

From Sondie Point to Lemboor, a distance of about 15 miles, the river runs south-west. This part of the river is characterized by a succession of whirlpools, which are so violent that no vessel can approach them; even the eddies occasioned by them are so forcible as frequently to resist sails, oars, and toying, and twist a boat round in every direction. At Lemboor Point the river again widens to a breadth of a mile, and runs westward with a regular but not a strong current to Bland, Embomma, about 20 miles distant. The country on both sides of the river between Sondie Point and Books Embomma Island does not differ in its physical character from the rocky districts further north.

At the Books Embomma Island the valley in which the river flows widens considerably, the rocky masses receding so far from one another as to leave a space about three miles in width between them. This space is half occupied by the two arms into which the river divides, and half by the islands which lie between them. The bed of the river is here about a mile and a half across, and its current in the mid-channel varies between a mile and a half and two miles an hour, but inshore on both sides it is only stagnant, and sometimes even foreshortened and widened to a considerable extent. The small counter current in the mid-channel is 15 fathoms. The islands are composed of schistus, and are barren: but along their northern side is a strip of low ground of great fertility. The hills on both sides of the valley are rather high and rugged, and are covered with bushy trees, and large trees which grow in the crevices of the rock. On their flatter summit, the under stratum, consisting of a compact clay, is covered with a black soil which seems capable of producing various kinds of grain.

Near 13°0' E. long., or about 50 miles from its mouth, the Zaire enters a valley which is about 10 miles across, and which does not materially change in width to its embouchure. One-third of this distance, or less than 20 miles, the flows between two high rocks is divided into three arms, of which the northern is called Maxwell's River, the middle one Mamballa River, and the southern Sonio River. The Mamballa River, also called the Bont River, because it is generally used by the vessels navigating the river, is filled with dry shoals, the channels between which are very winding. The depth of the channel north of the shoals varies from 1 to 15 fathoms, but the southern channel of the river is from 7 to 10 fathoms deep close to the southern bank. The current does not exceed two miles an hour. The three arms of the river are protected by several large and shallow channels which divide the tract between them into several from two to six miles in length. These islands rise several feet above the level of the river, and their shores are formed by a stiff clay, which on the margin of the river, and into which the current of water is condensed, has formed a high reedy grass and thinly scattered with palm-trees, in many places near the banks of the river the beds low and of great fertility.

Near 13° 20' E. long., the whole body of water is in one channel, which in the vicinity of the point falls two miles wide, but by degrees it widens to three, which is its width at Fathomless Point: this cape is considered as being situated on the northern side of the river. In this part the river is distinguished by its great rapids and cascades. The current even at a short distance the banks varies between four and six miles a mile. Though every afternoon a sea-breeze springs up, trying to enter the river generally find their way frustrated for several days, and they only succeed with difficulty uncoupled from the rapids of the shore. The great body of water discharged by such a rapid current has scooped out a channel two miles in width, but very deep. Above Shark Point, which is a southern side of the mouth of the river, it is seldom more than one mile across, but the whole bed of the river is incomparably unfathomable. Captain Vidal however ascertain depth varied between 200 and 450 fathoms. He observes that the great force of the current is apparently sensibly lessened by the rapidity with which the river passes the rocks at the Zelina cape, and this has suggested the supposition that a very considerable number of subterraneous passages under the slate rocks, depending, in the direction, where the river contracts its bed and forms the Narrows, and rising again below the cataract near Fathomless Point, where the regular current is disturbed by an eddy in the mouth of a large island, and two other islands that divide it from 14 to 20 fathoms in depth.

The immense volume of water discharged by the Zaire into the Indian ocean, compared with the quantity of water which passes over the rocks at the Zelina cape, has been a matter of great surprise, especially as it is not sufficient to turn a mill falls into the Zaire below cataract; and this has suggested the supposition that a very considerable number of subterraneous passages under the slate rocks, depending, where the river contracts its bed and forms the Narrows, and rising again below the cataract near Fathomless Point, where the regular current is disturbed by an eddy in the mouth of a large island, and two other islands that divide it from 14 to 20 fathoms in depth.

The water of the Zaire appears to possess some peculiarities. Thirteen miles from the entrance it is fresh and of a dingy red colour. After being kept 40 days it ferments, and for some time remains in a putrified state. A silver plate immersed for half an hour is greatly discoloured, and requires repeated cleaning to remove the stain. After being preserved in a bottle for four months, it lost its colour and became perfectly clean and devoid of any sediment.

It was formerly asserted that the tide did not make an impression on the current of the Zaire, but it has been ascertained that it causes the reflux of the stream very perceptibly as high up as the lower commencement of the Narrows, and is experienced in the river to the point where it amounts to from 12 to 16 inches. But though it causes the water to be dammed up and a counter current to arise both sides, yet, strictly speaking, the current in the middle of the river is never overcome by the tide.

The duned banks bordering the Zaire rise low and swampy country. It is principally covered with two different kinds of mangrove, the one a low bush, and the other a stately tree, resting on a mass of roots sprouting twenty feet above the ground, the trunks often rising to the height of one hundred more. Most of them are protected...
Aristotle said, "Dreamers see great things." Marcian lived a long time, and was a great learner. Clemens could not say what he thought. Greeks of the ancient world are often called "growing trees," and are covered with clusters of trees. The islands, which are frequently seen rising from the river, appear to be portions of the land, scattered here and there above the surface of the current. They are formed of rushes, reeds, and other plants, which are covered with birds. Occasions yest they drift a long way seaward, and vessels are sometimes jerked by them. The southern side of the entrance is formed by a peninsula, called Point Papua, or Point of the Bitter Pacific, which is so called that to seaward is called Point Papua or Point, from a pillar which was erected on it, as at several other places, by the early Portuguese navigators. The cape, called Shark Point, lies eastward, and constitutes with Greek stream Point the entrance of all the rivers. The peninsula, on which the two promontories are situated, has evidently been formed by the combined deposits of the sea and rivers, as the external or sea shore is composed of quartz sand, forming a steep beach, while the internal or river shore is composed of gravel. (Tuckey's Narrative of an Expedition to explore the River Zaire; Narrative of Voyages to explore the Shores of Africa, Arabia, and Madagascar, under the direction of Commodore J. L. Beale.)

ZALEUCUS (Zaleuros), celebrated legislator of the Epizephyrian Locrians in Southern Italy, is said to have been the first Greek who drew up a code of written laws. Marcian Heracleot, 313; Clemens Alexand., Stromat., p. 304; Strabo, vi., p. 259. It has been supposed that the term deme is conceived from this word, but it is not certain. The laws among the Greeks must be limited to the Greeks of Italy, since it is stated that Zaleucus derived many of his laws from the Cretans, Lacedaemonians, and the Arcadians. He is supposed to have had the Cretans and Lacedaemonians as written laws at that time, and, as a result, we must acquiesce in the common tradition that Zaleucus was the first of all the Greeks who composed a code of written laws. He lived in all probability about 600 B.C., but his hopes were the start of all the legal legislators, who are mixed with fable. According to Suda, who describes him as a native of Thuri, Zaleucus was originally a slave and a shepherd; whereas Diodorus xii, 20 calls him a man of good family. He is further said to have been called upon by a Minerva in a dream to be a legislator for the Locrians; and when the Locrians applied to the oracle about the means of getting rid of their political disturbances, they received a command to legislate for themselves. When Zaleucus announced his political constitution, he was executed by burning, and as a result he left a code of laws for them. Suda: Scholarid ad Pindar. Olymp., x. 17; Valer. Maxim., i. 2; Ext. 4; Aristotle, i. aap Clem. Alex. Stromat., i, p. 326. A great portion of his laws was derived from the code of laws of his father, but he was the first who fixed punishments for the crimes enumerated in his code; whereas before his time the punishment had always been left to the discretion of the judges. His laws, of which several specemes are still extant, were according to the unanimous opinion of the ancients very severe, but the Locrians observed them for a long period, during which they were called the "most observant of laws and order" (kávovitpa) of all the Greeks. (Zenobius, iv. 10; Diodoruss., xi. 606; Velleius Paterculus, Proverb., x, 50; Marcian Heracleot, 313, loc. cit.)

The code of Zaleucus embraced the religious and moral as well as the civil and political duties of the people, and entered so much into the detail of private life that it was termed upon by the ancient world the "Zaleuctic Code." It should be distinguished from other duties. Although Zaleucus, as has been shown incontrovertibly by Bentley, must have lived before the time of Pythagoras, both Suidas and Diodorus call him a disciple of that philosopher, an assumption which is corroborated by the fact that he left all practical wisdom to Pythagoras, as in the case of the Roman king Numa Pomphilus, who is likewise called a disciple of Pythagoras. The common story about the death of Zaleucus is as follows: One day, in the course of the day, he judged that the citizens of Locri ought to enter the senate-house in arms; but on one occasion, while they were at war, Zaleucus, forgetting his own law, entered the senate-house as a warrior; and when one of the persons assembed called out to him that he was violating his own law, Zaleucus threw himself on his sword, and thus punished himself. Extracted from Homer, I. i, p. 62. But the same story is related by others of Charonidas, with whom Zaleucus is frequently confounded by the ancients themselves (Valer. Max., vi. 5, Ext. 4; Diodorus., xii. 20; and Suidas states that Zaleucus fell fighting for his country. The contradictions and fables which occur in the history led some sceptical writers among the ancients, such as Timaeus, to doubt that a legislator Zaleucus ever existed.


ZAMIA (Hannibal: Numida.)

ZAMBI. A genus of plants belonging to the natural order Cycadaceae. The name Zamia is applied by Pliny to such cones of the fir-tree as spilt whilst they are upon the tree. It was first applied by Pliny to trees of the genus, but the name Zamia is now used for a single cylindrical trunk, increasing by the development of a single terminal bud and covered by the scaly bases of the leaves: the wood consists of concentric circles, the cellular tissue between which are exceedingly loose, the ligneous tissue being hard and tough. The trunk is covered with the leaves are pinnated, not articulated, and have a gyrate vernalion. The flowers are dioecious; the male flowers are arranged in tesselated catkins with abrupt scales, the female flowers are in ovary, sessile at the under side of each scale. The female flowers are composed of several scales, the style having two at the under side of each scale. The species are found in the tropics of America and Asia, and also at the Cape of Good Hope and in New Holland. A. sprante, has leaves very smooth, somewhat curved, with a few spinous teeth at the extremity: the catkins smooth, with potted scales in the female, and wedge-shaped ones in the male flowers. This plant is a native of New South Wales. The cone is about half the size of a man's head, and composed of nuts about the size of a chestnut. These nuts are eaten by the New Hollanders, but on being tried by English settlers produced sickness. Their flavour is not unlike that of chestnuts.

Z. euphali, Bread-tree Zamia, has lanceolate, spinous, smooth, entire leaves tapering at the base; the scales of the catkins abrupt, obtuse, pointless. It is a native of the south-eastern parts of southern Africa. It grows on the tops of dry hills, especially where the ground has been cleared for cultivation. It is used as a source of building materials. The tree reaches a height of 6 or 7 ft. Tindberg states that when the stems become old they are broken through by the Cajures and Hottentots, who collect the pith and the tip up in the skin of a sheep or cow which has been previously well rubbed with grease. It is then buried in the ground, and after remaining there till it becomes putrefied, it is taken up and bruised between two stones, and then forced into little cakes about an inch in thickness. These cakes are baked in wood-ashes, and then eaten by those who prepare them as a great luxury, though they are not at all palatable to a European taste.

Z. forsteri, Broad Rusty-leaved Zamia, has elliptic-oblong pointless leaves, copiously serrated from the middle to the extremity; the leaves are covered with short, hairy, yellowish, ridgeless spines. The plant is a native of the West Indies, and is said to have been grown at Hampton Court in the time of King William. This plant is said by Herman to yield a white mucilaginous gum, which is a stimulant, and acts on the stomach; it has a nauseous odour and an unpleasant taste, arising from the existence in it of a peculiar proximate principle. This may be removed by boiling, or roasting, &c., when some of the taste form a nutritive food.

About seventeen species of the old genus Zamia have been described. Eight of these are now placed in the genus or subgenus Arthuria, which is characterized by having the leaves articulated with the rachis of the frond-like midrib; there is also a preparation in the rudimentary stamen to form a two-celled anther, while in Zamia the
leaflets are confluent, and the pollen is not disposed in two lobed masses.

The genus Zamia has many representatives in a fossil state. Of the sixteen species that have been discovered, twelve resemble so nearly the recent species that they have received the same designation. The remaining four differ in the exertion and venation of their leaves, and hence they are placed under the fossil genus Zonites. The principal fossil discoveries have been made in the limestone and oolitic formations. Two fossil stems nearly resembling those of Zamia were found by Dr. Buckland in Portland stone. These are made by Brongniart to constitute the genus Mantellia, a name given in honour of Dr. Gideon Mantell.

ZAMORA, the name of a town of Spain, and, both under the division into kingdoms and the division into electoral districts decreed by the Cortes of 1822, the name of the province of which Zamora is the capital. The town of Zamora is situated on the right bank of the Duero, 118 m. by road from Madrid; it is situated 46 miles westward of Valladolid. The town is surrounded by walls, in which there are eight gates. The suburbs have nothing to recommend them to notice. The streets of Zamora are narrow, the houses lofty, and the general aspect of the town is sombre. The churches and the town-house are the finest buildings. The promenades are agreeable, and there is a fine bridge across the Duero. Zamora contains a cathedral and 22 parish churches. Before the suppression of the monastic orders there were 10 convents, 10 of which were for females. Zamora was a bishopric, a suffragan of the Archbishop of Santiago. There is little trade or industry of any kind; but there are a few hatters, tanners, dyers, manufacturers of woollen-stuffs, and distillers. The ruins of the house of the Ojde are shown at Zamora. The feast of the patron saint, San Juan-Sarius-Hermosa, is celebrated in the city. The Cortes have twice assembled in the town, in 1297 and 1302. Population, in 1833, 10,000.

The province of Zamora (under the ancient division), in the kingdom of Leon, bordered on Portugal, and extended eastward on both sides of the Duero river, being thus cut off from the north by the spur of a range of mountains which forms the frontiers of the province of Salamanca. This mountainous province is composed of the ancient province of that name, the northern part of the district of Toro, and the greater part of the duchy of Benavente. It is about 86 miles in length (from north-west to south-east), and 43 miles in breadth (from north-east to south-west). The Duero enters the province near the middle of the south-east border, and, flowing from a little south of east to a little north of west, nearly bisects the province. On reaching the north-western border it makes an abrupt turn to the south, and flows in that direction till it meets the Tormez at the south-west angle of the province. The Tormez forms, for a little way, the boundary between the provinces of Zamora and Salamanca. In its course from east to west the Duero receives first the Sequillo and then the river Tormez from the north. The Sequillo receives from the west the Tera, a mountain-torrent, which issues from a lake near the borders of the province of Orense, and has the whole of its course in the province of Zamora. The bed of the Duero within the province, and for several leagues on each side of the Tormez is broad and precipitous to admit of their being used for irrigation. The north-west portion of the province is mountainous; the rest is a high plain intersected by deep ravines and river-channels. The soil is generally fertile; the mountains are well wooded. The climate is agreeable in spring and autumn, but the cold of winter is severe. There are some mineral-springs in the north of the province; turquoise are found in the vicinity of the town of Zamora, potteries near the town of Toro, and saltpetre is collected from the soil in some places. Agriculture and every kind of industry are at a low ebb. A good deal of charcoal is prepared, and some wine of a low quality exported. But the roads are in so wretched a condition as effectively prevent any extensive exportation of the staple agricultural produce.

Toro, the capital of the ancient district of that name, included in the modern province of Zamora. It stands on the right bank of the Duero, about 13 miles east of Zamora. The town is rectangular in form, and has a wall and six gates. The streets are wide, both houses mean. There is a collegiate and 18 parish churches.

Benavente, the chief town of the ancient duchy of the same name, which, along with its title, is now included within the electoral district of Zamora, is situated 66 miles north of Zamora and 42 north-west of Valladolid. It contains 9 parish churches. The palace of the Dukes of Benavente is an antient and extensive building. Population, in 1833, 5,190.

ZAMORCA [MEXICAN STATES].

Zamora is the name of a town in the Mexican State of Zumpango. It is situated on the south-western side of the state, about 70 miles east of Mexico. It is a manufacturing town, with a population of about 10,000. The name of Zamora is also given to a town in the State of Guanajuato, about 30 miles south of the city of Dolores. The town is a manufacturing centre, with a population of about 5,000.

Zamora City, the capital of the Mexican State of Guanajuato, is situated on the north-western side of the state, about 100 miles south-west of Mexico City. It is a manufacturing town, with a population of about 30,000. The name of Zamora is also given to a town in the State of Tamaulipas, about 50 miles east of the city of Ciudad Victoria. The town is a manufacturing centre, with a population of about 5,000.
The battle of the eagle was not surrendered to become the fact, but it was a serious consideration of the crown domains over the annexed dishonored as a remnant of his satisfaction, expressed much sympathy with him, presented to him in a letter. And, according to his wishes, he was released from his service.

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crossed that he announced his resolution not to keep the promises he had made while a prisoner. This breach of faith elicited a pamphlet from Zamorski, published in 1690, with the title 'Facilitations inter Donum Austrianum ac Regem Polonicum et Ordines Regni Transactae, Scripta aliquot.'

The next seven years of Zamorski's life were consumed in a difficult struggle between foreign foes against whom he had to make head, and domestic factions from whom he had to wring a reluctant support. The king was not his friend, for Zamorski thwarted his wishes on many occasions, but could not dispense with his services. In 1641, the grand-chancellor baffled the Ottoman army in 1501-2; barred the retreat through Poland to the Tar- tars, who had made a predatory incursion into Hungary, in 1633; defeated the Turks in Wallachia in 1655, and again in 1657, 1658, and the Swedes in 1657. After the current of consciousness that his physical powers were giving way, he resigned the command of the army to his lieutenant, John Charles Chodkiewicz. From this time till 1603 Zamorski remained in retirement, occupied with his colonies and literary pursuits. The fruits of the latter were given to the world under the title 'Dialectica Chrysippa.'

He emerged from his retreat in 1603 to attend the Diet, and there is a wild grandeur about this the closing scene of his public life. The first wife of Sigismund III., an Angelen, disappeared, was dead, and he had married his sister, Zamorski, who had opposed the first marriage, was still more hostile to this: he was firmly convinced that the interests of Poland required an innermarriage with the royal family of Russia. The debate became vitally important; the chancellor, literary dispositions, had resolved to take no part in it, but the contagious excitement of the scene rendered him incapable of adhering to his resolution. He caused her seal to be placed near the throne, and after apologising for this liberty on account of his wife, if a young princess, presumed to address the king in a strain that has rarely been heard by princes. He declared his opinion that the king should concentrate his attention on the Swedish war with a view to terminate it; he reminded him that he had often before sacrificed the interests of the state to his own private ends; he protested against the marriage with an Austrian princess as likely to be fatal to Poland. Nor did he stop here: he accused the king of intending to secure the crown for his son in violation of the constitution, and of correspondence clandestinely with foreign powers; and he reminded him in a tone of increasing asperity that the Poles had ere then depoised and banished kings with whom they were offended. Sigismund, irritated by such language, replied with equal violence, and at the close of his speech laid his hand on his sword. At this the senate and deputies quitted their seats in a body with threatening murmurs; but the voice of the old chancellor was heard above all the din—Withdraw your hand from your sword, prince; do not oblige history to record the disfraces and your last action.

At the close of the Diet Zamorski retired again to his estates. On the 3rd of July, 1605, his attendants, who had fancied him sunk in meditation, found on approaching his chair that he was dead.

Zamorski was an elegant scholar, an accomplished diplomatist, and a successful general. That he should have been able to keep himself at the head of affairs during a period of nearly thirty years, in so turbulent a state as Poland, is of itself a guarantee of the power and energy of his character. His strength was his own even at this disaster of time, are calculated to please by their elegance, and by the knowledge of human nature that they display. His stern stoicism was the necessary consequence of a highly cultivated nature forces to endure the better part of his life with the fatigues of a fierce and vigorous state.

The part of his career upon which the mind feels most pleasure in dwelling, consists of the occasional retirements from public business, during which he devoted himself to colonising his estates and promoting literary institutions. About 1645 he laid the foundations of Novy Zamose, distant about two miles from Stary Zamose (old Zamose). He encouraged manufactures there, and fortified it so strongly, that it came to be regarded as one of the chief defensive lines of the Tartars. He established a printing-press, which became celebrated for the beauty of its impressions. On the 15th of May he opened the university of Zamose, to which he attracted the most eminent scholars of the nation, with a solemn inaugural oration. He granted lands in perpetuity to some of his valets, and encouraged the adoption of improved methods of agriculture.

Interesting particulars respecting these labours of Zamorski are contained in the narrative of two journeys made by Father Vasovzi to Poland to visit Zamorski, published in 1626 by J. W. Niemeyer at Warsaw, in 1622, from a MS. in the Alumbra Library at Rome.

John Zamorski II., born in 1626, was the grandson of the preceding. He was created, soon after he obtained his majority, castellan of Kalische, and was present at the capture, in 1651, of Warsaw, which was accomplished that king in his campaign against the Turks, in 1651, and earned by his bravery the appointment of palatine of Sandomir. He distinguished himself equally in the disastrous War of Succession, when Poland was defeated by the Swedes at Parnawa, and again at the hereditary fortress Zamose; and it was to this vigilant king, as commander of Warsaw, that Marshal Witczenski, the President von Ersk, and other important princes were intrusted. In 1659 he commanded the army which opposed the encroachment of John Casimir. In 1663 he was one of the nobles who remained faithful to John Casimir, and was mainly instrumental in effecting the disentomb of the insurgents under Chwiedereki. John Zamorski died suddenly at Warsaw, on the 2nd of April, 1665, where he had resided for two years. He was the third son of a family by wife, daughter of the Marquis de la Grande d'Arquin, and called in Poland La belle Francaise. Afterwards married the great Sobieski. Zamorski died without heirs of his body, his estates passed to his two sisters.

Andrew Zamorski, a younger son of a descendent of these two sisters, who had inherited the fief of Zamose born at Bielun in 1716. He received his education at the college of the Jesuits at Thorn, where he received his degree of Doctor in Law in 1732. In 1735 he was created a membro of the Polish visit foreign universities. He passed two years in the university of Liviltiz in Silesia; in 1739 he visited Paris, where his favourite studies were mathematics and jurisprudence; and he returned home in 1740. Finally, the brothers engaged in agitation about the loss of the inheritance, he reconciled them by giving up his share, and entered the service of Saxony. In 1745 he obtained the command of Prince Albert's regiment. In 1749 he quitted the army and returned to Poland with the rank of major-general. He was appointed marshal of the prince of Smolensko, an office which put it in his power to reform many abuses which had crept into the judicial administration of the province. In 1760 he emancipated the Jewish population of the province, and a greater number declined fiercely against the innovation. At the first Diet held after the death of Augustus III. (1763) Zamorski contributed much to the passing of a bill for the reform of administrative abuses. In 1768 the king of Prussia, in a treaty with Charles Alexander, gave great deal. The influence which this appointment enabled him to exercise over every branch of administration, and to employ in giving a better organization to the army and the educational institutions of the kingdom. When the Wars of Russia, in the Diet of 1762, proxied Ukraine. In 1763 he was one of the nobles who remained faithful to John Casimir, and was mainly instrumental in effecting the disentomb of the insurgents under Chwiedereki. John Zamorski died suddenly at Warsaw, on the 2nd of April, 1665, where he had resided for two years. He was the third son of a family by wife, daughter of the Marquis de la Grande d'Arquin, and called in Poland La belle Francaise. Afterwards married the great Sobieski. Zamorski died without heirs of his body, his estates passed to his two sisters.

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and they contain two books of letters, in which are particular
of his life. He died at Heidelberg in 1590. G. Gallizoli of Bergamo has written a biography of Girolamo Zanchi, published at Bergamo in 1783.

Francesco Zanchi, father of Girolamo and first cousin of Paolo Zanchi above mentioned, wrote a work, 'Commentarius de Rebus a Georgio Hemo praeclare gestis in primo adversus Maximilianum Romanorum Regem Bello a Venetis suseipto.'

'Tiraboschi, Storia della Letteratura Italiana (LAMCOSTLO), p. 459.'

ZANZIBAR is a country situated on the eastern coast of Africa. It does not appear that this name is in use among the natives or neighbouring nations who visit the country, and it is probably a corruption of Zanizibar, the largest of the islands belonging to it. There is also some difference of opinion respecting the extent of the country, some considering it to be bounded only to the north, and as the point where it joins the coast of Zanzibar. The extent of the coast-line exceeds 1500 miles.

The country extending along the sea is the only portion of Zanzibar which is known, and that only imperfectly, as it is not visited by European vessels. The description of other points to which slave-vessels formerly resorted, especially from the island of Bourbon, the interior is entirely unknown, and occupied by native tribes, which are always at war with the inhabitants of the coast, who are mostly trade and were called by

ZANCHI, a family of Bergamo in Lombardy, which produced several men of learning in the 16th century. Paolo Zanchi is considered its most distinguished member, a humanist, and a collector of ancient inscriptions. Three of his sons, Basilio, Gian Grisostomo, and Dionigi, entered the order of the Regular Canons of the Lateran.

BASILIO ZANCHI, born in 1501, went to Rome under Leo X, and is rarely visited by Englishmen of the Latin poet. After Leo's death he returned to Bergamo, and applied himself to theological studies, and entered the order of the Regular Canons in 1524. He wrote comments on the Bible, which are published. He was also well versed in Greek, and was employed by his Order of the Greek

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length apart. The islands themselves seldom rise above twelve feet, and generally overhang the rocky flats on which they stand. The summit of the heights is level, and from the constantly depopulated soil it presents the surface of sharp points, over which it is difficult to pass. The country opposite this labyrinth of islands is a succession of hills covered with verdure and of well-rounded lowlands. The pasture contains many antiquities, consisting of moulting tombs, tottering cedars, and other ruins, which were doubtless erected before the Portuguese got possession of this country. Though the soil of this tract is apparently fertile and the climate healthy, it is very little cultivated, having been laid waste by the Gallars who have extirpated the former inhabitants, or obliged them to take refuge in the islands.

At the southern extremity of this region (near 2° S. lat.) begins a low coast-line, which however contains many excellent harbours, as those of Kwanzo, Patts, Lamou, Formosa, Melinda (Maleauda), and Mombasa. There are only a few coral islands along it. The shores of the bays and harbours are low and mostly swampy; they are overgrown with mangroves, but at a short distance inland the country rises into low hills, between which are wooded levels of moderate extent. The surface presents a soil varying from red to a dark black, which appears to possess a considerable degree of fertility. In Formosa Bay is the mouth of a deep river, which is wide at the sandbank, although deep inside and a large river, it is difficult of access on account of a dangerous quicksand, over which at low tide there is only four feet of water. According to the statement of the natives, this river rises greater than many of the rainy season inundates the surrounding country for many miles, destroying innumerable wild animals, among the rest many elephants. At the distance of fifteen days' journey in a canoe there is said to be a large town, Zookabey, beyond which the current is too strong for progress.

South of Mombasa the general appearance of the coast is low, but not swampy, and well defined, having a sandy shore, and in some places a small intervening strip of coral. But at some distance appear various insulated mountainous islands of various size, which present a remarkable contrast to the general flatness of the country. Except in one part, where the coast is a patrid marsh, the shores are lined with villages, rendered conspicuous by a grove of cacao-nut trees, in the midst of which they are built. The country is apparently fertile. Parallel to the shores, at the distance of four or five miles, there is a line of sand and coral reefs with deep water between and inside, but to seaward entirely uninhabitable. The bay of Lindy has a flat shore, which is formed by the silt from the alluvial deposits thrown down by the river Lindy, which appears to be large, and at a distance of about eight miles from its mouth branches into several small channels, forming a complete archipelago of low swampy islets covered with mangroves. A few miles further south is the bay of Monfunf, which, from its almost inaccessibility, which it discharges, is considered as the most considerable river, next to the Zambezi, on the eastern side of Africa, but we know nothing of its course.

Opposite this country are the largest islands along the eastern coast of Africa, the islands Pemba, Zanzibar, and Mombasa. The most northern is Pemba, known by the Arabs as Al Huthum, or the Green Island, which extends from north to south thirty miles, and from east to west ten. It is seven miles from the main at the north end, and twenty-five from Zanzibar. It is in any part not more than 200 feet above the sea, and rests on a coral foundation. It is one of the most fertile spots in the world, being covered with a very productive soil, from which luxuriant vegetation springs up and which it abundantly yields ship-timber: but the largest part of the surface is cultivated, and produces, besides other plants, rice of the finest quality: it is in fact the granary of the neighbouring coast. Along its western side from Tondong to its extreme extremity there are several profound and safe harbours, among which is the best that is Masal at Cheek-Chack. Zanzibar is nearly twice the size of Pemba, and resembles this island in soil and fertility. Besides every kind of grain which grows between the tropics, it produces great quants of sugar, which in quantity and quality, in respect to the Red Sea, and Egypt, there are numerous harbours between Zanzibar and the main, formed by the islands and reefs which are dispersed over the channel which separates it from the continent, and which is from five to ten miles wide. These harbours are safe, and not difficult of access; but within the shores of Zanzibar there is not one land-locked port, and in this particular this island does resemble Pemba. The numerous inhabitants carry on a branch of manufacturing industry to a considerable extent, that of making round shields, about a foot and a half in diameter. These are made by the soldiers of Imam of Muskat as a protection against the fire of musquetery. They are manufactured from rhinoceros horn, which after being soaked or boiled are easily moulded in any form, and then embalmed by burning. Modern ivory is very little valued, having been for some time past less esteemed than the old, which are studded with rhinoceros teeth and several islets, which render access to it difficult if it seems to be somewhat smaller than Pemba. It is abruptly from an unfathomable depth, and is based upon coral foundation. The surface is covered with trees, and it appears to be tenely well peopled. The channels between the island and the main is about twelve across, but so thickly studded with coral shoals as impassable for vessels of any size without considerable danger.

Near opposite the mouth of the Mozambique River are Quirimba Islands, a numerous archipelago. They are various sizes, but all low, and formed of coral greens, with long flat reeds extending seaward, and these abrupts from an immense system of flats of these islands and the main are excellent, being sheltered on the west by the mainland, and in every other direction by islands and reefs: they afford perfect security to vessels in the heaviest gales.

The climate in summer is between the dry and rainy season. The rainy season generally commences four or six weeks after the sun has passed the zenith, and as Zanzibar tends on both sides of the equator, it commences at different times in different places. The rains are extremely abundant, and the rivers sweep off the adjacent countries to the distance of several miles. The summer in very great, but as during the last even a half no European has resided there for any length of time, no meteorological observations have been made and it is however difficult to state that Zanzibar is cooler in the summer months to Europeans, even where the country is not hot or swampy.

The productions are various, but very imperfectly known. There are in general cultivated the same articles of commerce. Rice and melon ap{T} appear to be only two kind of grain which are grown. Dhol (a small species of pana), peas, and beans are the most common domestic plants. Musk-melons, pumpkins, and the sweet sugar-cane are grown: cotton, tobacco, and cotton-seed are also cultivated. The forests contain many large trees, which some are used as timber. A plant which produces caoutchouc is frequently met with. Horses are not frequent, and rather small. Asses are of good size. Horses are also in great supply. The sheep are of the Tartar breed: they are very small, but their fleece is delicate and sweet. A few goats are kept for their milk, which are very abundant. The larger wild animals in the interior are the elephant, rhinoceros, lion, leopard, and some kinds of antelopes. The rivers contain hippopotami, crocodiles, which are numerous south of the equator, but rare north of it. Fish are abundant, and many land subsist on the produce of their fishing. A kind of boiled salted or dried, is an article of commerce. The islands export a considerable quantity of palm-kernels in great quantities, and exported to Hindustan. Gold is brought into the interior, but not in large quantities.

Zanzibar is partly subject to native paramount and partly to the Imam of Muskat. Many of the Zanzibar inhabitants are Somalil, and their chiefs appear to be independent. From the river Zuba to the bay of Kanyo the Gallare have advanced to the shores of the sea, and keep possession of that tract. The country between the Zanzibar and Melinda is sparsely inhabited. From Melinda to the river Panyangi extend the territories of the Sheik of Sultan of Mombasa, which in 1823 were under the protection of Great Britain. The remainder of the coast, as far south as Cape Delgado, is subject to the Sultan of Zanzibar.

The inhabitants are either tribes of African origin or settlers from other parts of the world. The Arabic tribes are the Somali, Gall, Dowl, Wanyek, and Sultans.
The Somalis occupy the most eastern portions of Africa, and have their chief depots in the Bay of Aden. They have two principal towns, one on the Bay of Aden, and the other at a distance of more than 500 miles southward, on the west coast of the continent.

The town of Aden is the principal city of the Somalis, and is considered as their capital. It is situated on the east side of the Bay of Aden, and is surrounded by high mountains on three sides, and by the sea on the fourth. The town is built on a rocky height, and consists of a number of large and small houses, built close together, and surrounded by a wall of stone.

The town of Aden is of great importance, as it is the chief market of the Somalis, and is the place where they obtain their provisions, cloths, and other articles of trade. It is also the place where they are accustomed to meet and converse with each other.

The Somalis are a warlike people, and are noted for their courage and bravery. They are also noted for their skill in the use of the bow and arrow, and are able to shoot with great accuracy.

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The Somalis are noted for their courage and bravery. They are also noted for their skill in the use of the bow and arrow, and are able to shoot with great accuracy.
To the sixteenth century, they certainly were in possession of numerous points of the coast. Most of the castles which are still found there, though partly deserted, or abandoned to the attack of being wrecked by the Portuguese. The most northern place occupied by them was the promontory of Hafoon, on the coast of Ajan, near 10° N. lat., which they intended to convert into an island by a canal cut through the isthmus which connects it with the mainland, in order to make it more defensible. But having lost Muskat, and being pursued by the Arabs, they abandoned the enterprise, and soon began to lose one place after another, so that towards the end of the sixteenth century there was no longer a single point on this coast. The circumstances which brought about these changes are not known in Europe. After the Portuguese left the country, the Arabs of Muskat several times tried to occupy this coast, and more than once they succeeded in getting possession of some of its harbours, which however they generally lost after some time. It does not appear that they ever had in their possession so considerable a portion of it as at present, embarking all the same among Khyoo Bay to Cape Delgado, and the islands lying opposite this coast, with the exception of the territory of the Sheik of Mombas, who in 1823 placed them under the protection of the English, as already stated. (Narrative of Voyages to explore the Shores of Africa, Asia, and Madagascars, under the direction of Captain Owe).

ZANNICHELLA, a genus of plants belonging to the natural order Niaudaceae. This name was given by Micheli in honour of John Jerome Zannichelli, a physician and botanist, who was born at Nocera, in 1622. He had published a work on the preparation of medicines, entitled "Promptuarium Medicorum Chymicorum." He made many excursions through all the states of Venice in the capacity of physician-naturalist, an office to which he was nominated by the Senate on the occasion of an extensive museum of natural history, and died in 1729. After his death his son published various papers on botany, geology, &c., under the title of "Opuscula Botanica posthuma."

The flowers in this genus are monococcous. The male flowers have neither calyx nor corolla, with a single elongated filament surmounted by an oblong anther; the female flowers have a calyx consisting of a single leaf, no corolla, two green or four, the stigmas peltate, and the capsules sessile.

There is but one species of this genus, the Z. palustris, the Marsh Horned-Pondweed. It is a native of ponds, ditches, and rivulets in most parts of Europe. It also occurs near the sea coast in the countries of Southern Russia, and in the vicinity of the lakes of Lake and Rus. Koch, in his "Flora Germanica," records three varieties, major, repens, stipitata. These have been recorded as species by other writers.

ZANONIA, a genus of plants belonging to the natural order Marnionaceae. This name was given by Bontia in honour of James Zanoni, who was superintendent of the Botanical Garden at Bologna, during the 17th century. He published, in 1675, a folio volume in Italian, entitled "Istoria Botanica," containing descriptions and plates of eighty new and rare plants. He died in 1676. An edition of his works was published by Monti, in Latin, in 1742.

The only species belonging to this genus is Z. indica, the climbing Indian Cucumber. The fruit is described by Rhinanthus, only triangular, and having the flavour of the cucumber.

ZANOTTI, GIAMPIETRO CAVAZZONI, distinguished alike for his paintings and his writings, was born in Padua in 1702, and was a pupil of the school of Lorenzo Passini, and was the first painter of that city. Zanotti soon displayed great talent, and there are still several fine works by him at Bologna, in public and private buildings. He is however better known for his writings upon art, and few, says Lanzi, ever handled pencil and pencl so well as Zanotti. He published several poems, but the following are his principal works.


2. Life of L. Passini—Nuovo Fregio di Gloria a Felisima sempre pittrice nella Vita di Lorenzo Passini, Prince of Bolognese, Bologna, 1708, 4to.


4. hints to a Young Painter—Avvertimento per la formazione di un Giovane alla Pittura, Bologna, 1728.


He wrote also a Life of Bologna, and whole volumes of poems by him were published at different periods in Bologna. He was secretary to the Institute of Bologna, in which his brother F. M. Zanotti held the chief of philosophy. His writings are of a philological history of the Academy Clementia. He died at Bologna in 1755, aged 91, and was buried in the church of Maria Maddalena, where there is a monument to his memory, with an inscription beginning as follows:—

Zenotti, Academia Clementina, &c.; Fasani, ann. Bolognus,

ZANTE (Zanesia, or Byzantium), one of the present Ionian Islands. The chief town, of the same name as the island, is situated between 37° 32' N. lat. and 23° 13' E. long. The nearest headlands of the More (now Niccolo), and of Zante (the point of Domia), are 2 English miles asunder.

From Cape Skinari, the most northerly part of the island, to Cape Gerakia, a stone-bastioned fort in a straight line 23 English miles in the direction north-west to south-east; from Cape Skinari to Kieri, the south-west head, is 22 miles in the direction north to east of south. Cape Gerakia and Kieri are headlands of the south coast of the Gulf of Gerakia, an extensive marine museum, and the border of the Gulf of Ionian, 8 English miles. A particular drawn from a straight line joining these points, the boundary of the Gulf of More (point of Domia), is 2 English miles asunder. The north-east coast is indented by two deep bays. The bay of Zante and the Saline cuts into the south of the straight line joining the extreme part of this coast; and the headlands of Xanthi (south of Zante) and Knyrono (north of it) advance about to the north of Mount Vrachion (324 feet), near the headland of Mount Vrachion (254 feet), which cuts into the south-west angle of this plain, near the shore of the bay of the Gulf of Kieri, the pitch-wells mentioned by Herodotus.

The only sheltered ports in the island are the Gulf of Kieri. Between the main and the small isle of Polis and Marathousa, but the mouth of the river Bousa renders them unavailable for the purposes of commerce. The bay in which the town of Zante is situated is a small open roadstead. The Camura, the only navigable river of the island, falls into this bay. The bay to the north-west of Zante, on the nearest part of which are situated the Salines of Calistri, is full of shallows, and has at its entrance the reef of St. Nicola.
Though there is only one stream of water in the island, there are plenty of springs. Some of them are hot, and those, along with the pitch-wells, would of themselves indicate that subvolcanic formation which the frequent and violent earthquakes to which Zante is liable would lead us to attribute to it. The climate is agreeable. The epithet 'woody' (άλησις, 'mimosaros'), bestowed upon it by Homer and Virgil, is no longer applicable, the only wood on the island being a species of poplar. The principal article of export is, however, the olive, which is principally grown on the lime trees on the greater part of the island in the interstices of the olives, and that of an indifferent quality. Some wine is made, of which nearly half the island is sufficient to supply the inhabitants for three months of the year: the supplies for the other nine months are derived from the Morea. The mineral products are bitumen, of which 100 tons are annually extracted from the island, and salt, of which any quantity might be manufactured, though the inhabitants make little more than serves to salt their olive oil.

The pitch-springs of Zante were visited by Herodotus in the fifth century B.C., and described by him (iv. 195). The pitch was then collected for economic purposes. Thus we have evidence of this supply of pitch having existed two thousand years ago, and it is probable that it has not been interrupted. Pliny describes it (xxxv. 15).

There are some inconsiderable manufactories of cloths, silks, and cotton thread, jewellery, liqueurs, and soap.

The population of the island was estimated, in 1863, at 40,000; of these 10,000 inhabited the town of Zante, the rest being in small villages. The rest are contained in 45 villages. Under the jurisdiction of the local governor of Zante are placed all the smaller islands around it, and along the shore of the Morea from Zante as far south as Cape Gallo.

Zante is the ancient Zaeinthus. According to Pausanias, Zaeinthus, the son of Dardanus, of Phoebus of Arcadia, colonized the island; Pausanias mentions this tradition by way of explaining the fact of the acropolis of Zanzibar being called Phoebus (vii. 24). This legend, and the tradition attributed to Boeotius by Pliny (xxvi. 79, ed. Hard.), that Saguntum in Spain was founded by emigrants from Zaeinthus two hundred years before the Trojan war, implies that it was early distinguished among the Greek islands. (Livy, xxxvii. 17) and Strabo (p. 159, ed. Cassub.) also make Zaeinthus the parent city of Saguntum. The Zaeinthians themselves were a colony of Achaenians from the Peloponnesus. In the Peloponnesian war Zaeinthus sided with Athens and was ravaged by the Laconians. (Thucyd., i. 66.) The Zaeinthians also joined the Athenians in the invasion of Sicily. (Thucyd., vii. 57.) The island remained independent till the war of the Romans against Perseus, in which its inhabitants embraced the Macedonian party. At the termination of the war it was declared a dependency of Rome, and placed under the praetor of Asia. The island continued an integral part of the Roman dominions, and, after the partition of the empire, of the Eastern empire, till its subversion by the Turks. In 1498 Zante was taken by the Venetians from the Turks, but restored at the peace of 1501. In 1578, having again fallen into the hands of the Venetians, it was ravaged by the Turks. Since that period it has constantly remained one of the Greek dependencies of Venice, and has passed, with the other islands of the Ionian group, from Venice to France, and from France to England. [IONIAN ISLANDS.]

(ZANTHOMIZA. Mr. Skennard's name for a subgenus of Meliphaga. [MELIPHAGI.] The proper form is ZANTHOMYZA.)

**ZANTHOMYZA.**

Generic Character.—Bill moderate, much curved; the casque considerably elevated. Face naked. Middle toe much longer than the hallux. The femoral tarsal (type. Soc.)

Example, Zanthomyza phrygana.

Description.—Nares nearly alike in colouring, but the female much smaller than the male. The young de-tritus is white, but soon excretes from the face, that part being wholly clothed with feathers.

Head, neck, upper part of the back, chin and chest, black; scapulars black, broadly margined with pale yellow; lower part of the back black, margined with yellowish white; upper tail-coverts like the scapulars; wings black, the coverts margined with yellow; spinous wing yellow; primaries black, with an oblong stripe of yellow occupying the margin of the outer and a portion of the inner web next the quill, which is black; secondaries black, broadly margined on the outer web with yellow; under surface black, with an arrow-shaped mark of yellowish white near the extremity of each feather; two centre tail-feathers black, slightly tipped with yellow; the remainder black at the base, and yellow for the remainder of their length, the black decreasing and the yellow increasing as their position proceeds from the outer to the central ones; sides reddish brown; bill black; feet blackish brown; warty excrescences covering the face dirty yellowish white. (Gould.)

This is the *Myops phrygana, Black-and-yellow Bee-eater and Black-and-yellow Honey-eater of Linnaus; Embroidered Bee-eater of Shaw; Warty-faced Honey-eater and Meliphaga phrygana of Lewin; Le Mele Geoffroy de Le Vaillant; Philemon phrygana of Vieillot; Anthocharis phrygana of Vigors and Horsfield; and Most Regent Bird of the colonists of New South Wales.

Geographical Distribution. Habits, Food, &c.—Mr. Gould, who has collected the synonyms above noticed, states, in his great work on *The Birds of Australia* now in the course of publication, that this is not only one of the handsomest of the Honey-eaters, but is also one of the most beautiful birds inhabiting Australia, the strongly contrasted tints of its black and yellow plumage rendering it a most conspicuous and pleasing object, particularly during flight.
Although it is very generally distributed, its presence appeared to Mr. Gould to be dependent upon the state of the *Eucalyptus* [EUCALYPTUS], upon whose blossoms the bird mainly depends for subsistence; and it is, consequently, only to be found in any particular locality during the season when those trees are in full bloom. 'It generally resorts,' says Mr. Gould in continuation, 'to the loveliest and most fully-flowered trees, where it frequently reigns supreme, buffeting and driving every other bird away from its immediate neighbourhood; it is in fact the most pugnacious of the bird species, and in particular hinders the smaller Meliphagides, and even to others of its own species that may venture to approach the trees upon which two or three have taken their station. While at Adelaide, in South Australia, I observed two pairs that had possessed the same tree; but it appeared to me that the smaller trees that had been lost standing in the middle of the city, which tree, during the whole period of my stay, they kept sole possession of, rallying forth and beating off every bird that came near, I met with it in great abundance among the bushes of New South Wales, and also found it breeding in the low apple-tree flats of the Upper Hunter. I have occasionally seen flocks of from fifty to a hundred in number passing from tree to tree, as if engaged in a partial migration from one county to another, probably in search of a more abundant supply of food.'

The same enterprising observer states that the note of this species is a peculiar loud whistle not entirely devoid of harmony, and describes the nest, which is usually composed of overhanging branches of a *Eucalyptus*, round, cup-shaped, about five inches in diameter, composed of fine grasses, and lined with a little wool and hair. The eggs are two in number, of a deep yellowish buff, marked all over with indistinct spots and irregular blotches of a lighter and dull purplish grey, particularly at the larger end, where they frequently form a zone.

The stomachs and intestines of the specimens which Mr. Gould killed and dissected among the brushes of the Billabong, is entirely filled with liquid honey only; insects however, he thinks, doubtless form a considerable portion of their diet.

**ZAPORZIA, Dr. Leach's name for a genus of RALLIDE.**

**Genetic Character.**—Bartment slender, shorter than the beak; the bill long, compressed, acute; upper mandible gradually incurved. *Nestris* linear, lateral, placed at the base of the bank. *Leva* long, slender, obtus, with three toes in front; the hinder toe elevated from the ground at its base; the tibia half naked. (Gould.)

**Example.**—Zaporzia porzana, Spotted Crane.

**Description.**—Adult and Old Male. Forehead, eyebrows, and throat, leaden grey; sides of the head, ash marked with black; upper parts olive brown, but all the feathers black in the centre and variegated with small spots and stripes of pure white. Breast and lower parts olive green, with ash and marked with white spots; these spots are rounded on the breast, but disposed on the sides in transverse bands. Middle tail-feathers bordered with white; lower tail-feathers pure white; Bill greenish yellow, red at the base. Feet greenish yellow. Iris brown. Length about nine inches.

**Adult Female.**—Ash-colour of the throat and neck less extensive; sides of the head with brown spots; base of the bill with less reddish. N.B. Both sexes, in autumn, have the bill of an olive green, brown at the point.

**Young when first hatched.**—Covered with black down. Young before the Molt.—Throat and middle of the body whitish ash, often whitish with small brown streaks. Eyebrows, face, and cheeks dotted with white and black. On the lower parts a greater number of white spots than in the adults. Lower tail-feathers bright rusty. Bill and feet greenish brown.

**Geographical Distribution.**—Sweden (summer visitor, rare). Southern Russia, North of Germany and Holland (rare). France, Provence, and to the Mediterranean (more common). Of most frequent occurrence in the South and East of Europe. Has been seen at Smyrna in the winter, and is stated to extend to India, England, Scotland, Wales (summer visitor, but not common). Ireland (occasional summer visitor).

This is the *Petit Râle* of Eur. Davidcoulomme and *Marabout de l'Europe* of the French; *Porzana* of the Germans; *Porzana* (Porzana) *Grauendio*, *Grazendio*, and *Gallinella* of the Italians; *Punktierlsvolkhu* and *Kleine gesprekelte Wasserhühner* of the Germans; *Speckled Water Hen* and *Shitty* of the modern lyric, and *Dusky Crake* of the ancient Britons.

**Habits, Food, &c.**—Slugs and other small molluscs, worms, water-insects, and tender vegetables form the food of the Spotted Crane, which arrives in this country about the middle of March, and stays as late as nearly the end of October. In those countries (marine principal) where it seeks congenial haunts in marshes or morasses, the sportsman finds a good dog necessary to force it from reeds, rushes, or tangled rank grass which hinder the gun or slug-gish stream. Colonel Hawker gives the best directions for managing them in the field, and, as in most of the other valuable hints, in a few words. 'In shooting all long rails, press them very hard, or you will have difficulty in getting them on wing. If they are in a hedge, go near your dog's, and shake it before them. Having done this, you should fire, if there is any chance, as the difficulty of springing them a second time is tenfold.'

Although the Spotted Crane is not common in the islands, there is no doubt that it breeds here, the eggs of young having been found in the Norfolk marshes and other localities. Mr. Selby, accompanied by a shooting dog that was up to its tricks, sometimes flushed as many as six in the large Northumbrian moors in his neighbourhood, just before their autumnal migration, and these were young birds of the year.

The nest is generally formed in some reedy or wooded marsh on the sandy soil, and often on the bank opposite to the pool on which the particular species of *Eucalyptus*, or water-plants, are inhabited. It is composed of a finer lining

The six, seven, eight, or ten reddish white eggs are spotted and speckled with dark rusty brown, and, as soon as the young Crakes quit the shell, Montagu says that they become whitish, or else grey, and are regarded by sportsmen, yet there is scarcely a greater delicacy than the one or the other. Both are indeed first-rate, but the Spotted Crane for choice.

There are two other European and British Zoop. viz. the Little Crane or Ostragesus Gallinula, Zeyp-putza, and Ballain's Crane, Zaporzia ballainn, of which the late Mr. Temminck says that the sprees are often found in Japan are the same with those killed in Europe.
Two species, Zopornia notata, Gould, and Zopornia splendens, Gould, are figured and described in 'The Zoology of the Voyage of H.M.S. Beagle,' edited and superintended by Charles Darwin, Esq.

The habitat of the first of these, which was shot on board the Beagle, is stated to be the Rio plata; of the second, the Galapagos Archipelago.

The following is Mr. Mark's description of the habits and locality of the last-mentioned species:—This bird frequents in large numbers the high and damp summits of the islands. It lives in the thick beds of Carex and other plants, which, from the condensed vapour of the clouds, resemble a forest. The bird is in this instance concealed; it often utters a sound and peculiar cry. The female is said to lay from eight to twelve eggs. It is, I believe, the only bird in this archipelago which is exclusivly confined to the upper parts of the islands.

ZARA, one of the four cities of Audressel-Dalmatia, is composed of the northern portion of the continental part of the province, of the Quarnero islands Arbe and Pawe, and of some adjacent islets. Its area is 2000 square miles, with 125,000 inhabitants, of whom about 88,000 are Roman Catholics, the rest a Fremunder Not United (i.e. Schismatic) Greeks.

ZARA, the capital of the circle and the kingdom, situated in 44° 8' N. lat. and 15° 15' E. long., lies in the plain between the hills of which it is divided from the continent by a deep moat, over which there is a drawbridge. The city is divided by a straight main street and a cross street into four quarters; the other streets are straight, but narrow, ill paved, and unfrequented. The origin of the name is uncertain. It is derived from (borgo intorno e erizzo, or Albanian village), 650 stone houses and 8000 inhabitants, most of whom speak Italian. Of the six churches (in which there are many good paintings) the most worthy of notice are the San Giusto, called Ducale, by the Venetians, and that of St. Simeon, the patron saint of the city, whose mortal remains are deposited in it. Zara is strongly fortified; the harbour is excellent, and capable of containing a large fleet. It is the seat of the government of the province, has great maritime offices; the residence of a Roman Catholic archbishop, and its chapter. Among the public institutions and establishments are a lyceum, a gymnium, an archiepiscopal seminary, a normal high school, a public school for females, a college for land and civil and military hospital, a naval and military arsenal, a theatre, a casino, &c.; the Pellegrini Museum is a private collection of works of art and antiquities. There are two great canals which form the commercial channel. The city is a great fishery, especially that called Marschello. Most of the inhabitants however derive their subsistence from the fishery amongst the neighbouring rocky islets (scogliere), on several of which a little flax is grown. The trade of the city is exceedingly large; it is the central part of a group of subordinate cities; the residence of a Roman Catholic archbishop, and its chapter. Among the public institutions and establishments are a lyceum, a gymnium, a normal high school, a public school for females, a college for land and sea officers, a naval and military hospital, a naval and military arsenal, a theatre, a casino, &c.; the Pellegrini Museum is a private collection of works of art and antiquities. There are two great canals which form the commercial channel. The city is a great fishery, especially that called Marschello. Most of the inhabitants however derive their subsistence from the fishery amongst the neighbouring rocky islets (scogliere), on several of which a little flax is grown. The trade of the city is exceedingly large; it is the central part of a group of subordinate cities.

A very great inconvenience is the want of sufficiency of fresh water, which is felt almost every year during the heat of summer, notwithstanding the four springs which contain 40,000 tons of water. On some occasions, for instance in 1828, the inhabitants have been obliged to obtain a supply from the waterfalls of the Kerta, nearly 50 miles distant.

ZARINA. [Soudan.]

ZARLINO, GIOSEFFO, the most celebrated of all the Italian writers on the speculative and practical theory of music, was born at Rapallo, February 7th, 1517, in the city of Rapallo, in the province of Genua, of what ever age or country, who have treated on this subject, Meisene and Kircher excepted,—was born at Chioggia, an episcopal city in the Venetian States, in 1519, and little more is known of his parentage by history. Judging from his education and mathematical knowledge, it would appear that, though entered as a boy-chorister at St. Mark's, Venice, he was educated for one of the learned professions, and the reverendo prefixed to his name, which seems to have been a usual title, indicates that he was of the ecclesiastical order. It is stated by Sir John Hawkins, as an established fact, though he does not name his authority, that Willard, his master in the cathedral, prevailed on him to devote himself chiefly to music, which information he most likely found in Salinas. He is styled, in the best edition of his works, that of 1591, Trattato di Cappella de 1' Arcivescovi Sigurgio de Venetia; or, in other words, he was director of the music and organist of the state church, St. Mark's, at Venice, in which office he succeeded Willard. Boyle therefore, in his translation of this title, is not in error, as Hawkins alleges, who possibly may not have examined the original with his usual attention.

Zarlino published his first work, L'istitutioni Harmoniche, in 1554, from which period Dr. Burney tells us (who has been an uncorrected in his dates, he was continually revising and augmenting his works.) The same author further remarks, that the musical science (i.e. its practical part) of Zarlino may be traced in a right line from the Netherlandis, as his master, Willard, the founder of the Venetian school, was a disciple of John Dethon, who was a scholar of the great Josquin. [Willard.]

The works of Zarlino, in the edition before mentioned, are in four volumes or parts (quattro volumi), bound up in three thick folios, of which upwards of a thousand pages are devoted to music, and all the forty to the essays. Their titles are 1. L'istitutioni Harmoniche, divided into four parts. 2. Le Demonstrationi Harmoniche, contained in five dialogues. 3. I Supplementi Musicali, in eight books. 4. Un Trattato di Patience, or of Patience on Patience, most useful to such as would lead a Christian life. Un Discorso, &c.: A Discourse on the true year and day of the death of Jesus Christ. Un' Informazione delle origini dei R. P. Capuccini: Information relative to the Capuchins in the院校 of d'acolti Dubij, &c.: All doubts removed concerning the correction of the Julian year, as made by Pope Gregory XIII.

It is evident that Zarlino supplied all subsequent writers on the subject of ancient music with many valuable materials. He was most laborious and indefatigable in his researches, and successful in their results. But it must be admitted that he was obstinate of his learning, and might have compassed his three first volumes into half the space, with great advantage to himself. His prolixity has, no doubt, deterred many from proceeding far with him; nevertheless, an experienced person, one who knows how to make the use of a well-informed and terse and tedious writer, will not regret having looked through, and occasionally studied, the works of Zarlino.

ZEZ (called Kise) by the Greeks, Cea by the Romans, an island in the Egean, about 13 English miles south-east of Cape Colonna: the island of Makronisi is nearly in the middle of the island of Cea, is inhabited, and contains about 5700 N. lat. and 24° 20' E. long., on the southern coast of the island of Mount St. Elias. The island is 14 English miles in length from north to south, and 10 in breadth from east to west. It is one broad-tailed hill rising from the low shore-line to the height of Mount St. Elias. The island is said to contain 'the shore,' says Mr. Addison, 'made us hope for more than the usual cultivation, but we were disappointed. There is only one miserable town built on a mountain. There are some remains of the ancient Cills to be seen, consisting chiefly of the ruins of a temple. Most of the Egean islands, which are so beautiful at a distant, are nothing but bare, scraggy, uninhabited rocks.' Notwithstanding this dismal description, the capital, which is situated on the brink of a ravine between 2 and 3 miles inland from its port, Raphilimani, is inhabited and contains about 8000 inhabitants; and the whole island about 5000. The climate is healthy. The products are barley, fruits, tolerable wine, cotton, sheep, and silk-worms. Zea is the ancient Cittos, but it does not appear that any temple was ever built beyond the temple mentioned by Addison, and the ancient walls of the capital. A survey of this island has been executed by direction of the British Board of Admiralty, but the plan has not been executed, nor the materials so arranged as to be accessible.

Strabo (486, ed. Camb.) states that Cittos had originally four cities, of which only Cittos and Carthara existed in his time: Poessa had been united with Cittos, and Cittos and Carthara united for the sake of Julius. Stephanus (sive, in the title, or by the error of copyists, calls Carthara a town of Zara, Simonides was a native of Cittos, and also the poet Barchides, Erastinus the physician, and Aristotle the Peripat-
the philosopher. The people of Cæs were Ionians from Athens, and they supplied seven vessels to the Greek fleet at the battle of Salamis, B.C. 480.

( C. G. Addison, A Journey to the East ; Arrowmith's Map of Greece; Dictionnaire Géographique Universel.)

ZEA, a genus of plants belonging to the natural order Gramineae. This name is identical with the Greek Zeéa, but the Greek plant was a species of Triticeum or Hordeum, and not at all agreeing with the present genus, which is entirely American.

The species belonging to this genus are monocious. The male flowers are in distinct spikes: the eilaxis consists of a 2-flowered blate glume; the corolla of a blate glume: in the female flowers the eilaxis is a 2-valved glume; also the corolla; the style is single, efform, pubescent; the seeds solitary, immersed in an obovate receptacle. There are two species.

Z. Mays, Common Maize, or Indian Corn, which is known by its entire leaves. It is a native of America, and is cultivated there, as well as in most countries of Southern Europe. It is the species Triticeum, those of this genus present almost innumerable varieties, from the cultivation to which they have been submitted. As an article of food, the sugar is much inferior to that of the Triticeum, nor will it ripen fully in high northern latitudes.

Z. Caragana, Chili Maize, or Valparaiso Corn, is distinguished by its serrated leaves. It is a smaller plant in all its parts than the foregoing, and is a native of Chili. A sort of religious reputation is attached to this plant on account of the grains when roasted splitting in the form of a cross.

A new application of the maize has been lately proposed. It is found that previous to the ripening of the fruit the sap of the maize contains a large quantity of sugar. If this sap be boiled and the sugar may be easily obtained from it, and in such quantities, it is stated, as would render the cultivation of the maize for this purpose much more profitable than that of the sugar-cane. Professor Croft, in a paper read at the Linnean Society, in February last, stated that experiments had been made on this subject in India, from which it appears that the sap of the stalks of the maize contains more than three times as much sugar as that of the beet, and five times as much as that of the maple, and frequently exceeding in quantity that of the ordinary sugar-cane as grown in the United States. The preparation of the sugar is also stated to be much more easy than that obtained from the sugar-cane. Another advantage also is the fact, as the juice in which the maize comes to perfection, as the juice may be obtained from seventy to ninety days after the planting, whilst with the sugar-cane it requires eighteen months. The refuse from the stalks is found to make an excellent fodder for cattle. The quantity of the sugar is said to be increased by destroying the ears of the corn during its growth.

(Cyclopedia of Plants; Reports of Linnean Society, in Gardener's Chronicle.)

ZEA MAYE. [Maize]

ZEA, or May, is a province of the kingdom of the Netherlands, situated between 54° 14' and 51° 47' N. Lat. and 3° 13' and 4° 7' E. Long. It is formed of the ancient province of that name, of the tract called Dutch Flanders, and of a group of islands formed by the several arms of the Scheld. It is divided into five parts, which are the north by two, the centre of which is the Scheld, which separate it from the islands of Overflade and Goeree, belonging to the province of Holland; on the east by the provinces of North Brabant and Antwerp; on the south by Flanders; and on the west by the German Ocean. Its area is 7866 square miles, and its population to the official return, was, on the Ist of January, 1812, 135,533 souls. The surface is low, only a few feet higher than the sea, and the monotonous plain is only broken here and there by artificial mounds, sufficiently protected by dews from the encroachments of the sea, it is necessary to secure the country by numerous dykes, which run along the coasts and the sides of the rivers; yet different parts of the province have been exposed at times to severe estaminities from the breaking of the dykes in storms at high tides, particularly in the years 1302, 1363, 1522, 1532, and 1548. Whole towns and districts have been overwhelmed and abandoned; and though parts of them have been subsequently recovered, several
Zealand, or SEELAND, is the largest and most important island of the Danish monarchy. It lies between 53° 2' and 56° 8' N. lat. The area is 7,362 square miles (according to other estimates only 6,040). It is bounded on the north by the Great Belt, on the west by the Sound, which separates it from Sweden; on the east by the Great Belt, which separates it from the island of Funen; and on the south by the Baltic, which separates it from the islands of Moen and Falster. The surface of this island resembles that of the mainland, having no mountains; but it is not, like them, a uniform flat; it is diversified with low hills, and contains many beautiful spots adorned with fine beech-forests, which present a variety of scenery, the appearance of which, when the air is clear and fine, is heightened by its perfection, that has been compared with that of Lombardy.

The soil is very rich; it yields abundant crops of corn, especially barley. The pastures too are excellent, and the herbage there is almost inexhaustible; the latter, though rich, is but spirited. In the middle of the island turf is used for fuel, wood not being so plentiful as in the other parts. The bays and creeks, with which the island is indentured on all sides, abound in fish of many different kinds. Most of the men, however, live by farming. Denmark is a confederacy, with the island of Zealand, the population of which is 400,000 souls. Zealand contains the capital, Copenhagen, the fortress of Holstein, which commands the entrance of the Sound, and all ships passing through that strait pay the Sound duty. Copenhagen, or Fligt, is composed of royal palaces and country-houses.

Denmark; Copenhagen; Elsinore.

The bishopric of Zealand, 3000 square miles in extent, with 300,000 inhabitants, includes, besides Zealand, the islands of Bornholm, Moen, Samsoe, Oesel, and some small islands in having no mountains; but it is not, like them, a uniform flat; it is diversified with low hills, and contains many beautiful spots adorned with fine beech-forests, which present a variety of scenery, the appearance of which, when the air is clear and fine, is heightened by its perfection, that has been compared with that of Lombardy.

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beach. The natives have many plantations here, and they get good crops. Towards Cape Wara, where the isthmus joins the broader peninsula, the land is of great fertility. On the eastern shores of the isthmus is an isolated hill, called Mount Camel, or Houhoun, which rises 500 feet above the sea. On its southern side is a harbour capable of receiving the largest vessels, with anchorage close to the eastern shore; but the entrance is not more than a league wide. The southern extremity of the isthmus, Houhoun is partially cultivated. Where the isthmus terminates on the south there is an extensive alluvial district, which stretches from the western to the eastern coast, and for miles amount to the course of the Awaron, a river which empties itself into the estuary of Rangaunui. This tract is of great fertility, and, when cultivated, produces very abundant crops of wheat, Indian corn, and other grain. In its natural state it is perfectly open in many places, and only covered with Coriaria sarmosenta, fern, high flax, and here and there some spots of grass. In other parts it is overgrown with a jungle of Dracena australis. The estuary of Rangaunui is an extensive arm of the sea, but it is shallow, and the intricate channel admits only moderately-sized vessels. The Awaron, though a small river, is navigable for boats at high-water to the distance of about 10 miles; the tides rise 10 feet, and the river has little fall in its lower course. Canoes ascend it nearly to its source, which is at the foot of Maunga Taniva, a remarkable mountain, rising 1500 feet above the surrounding hills. The upper valley of the river is here and there clothed with groves of large trees. The whole valley of the Awaron contains about 120,000 acres of land. Within a short distance of the sea, due to the quality of the soil, the facility of cultivation, as well as of water-communication, the abundance of excellent wood and of other building materials, this tract is one of the most favoured in New Zealand. There are several European settlements. The Hills has more progress in civilization than in other parts of the islands; they cultivate, besides Indian corn and sweet potatoes, wheat, potatoes, vines, and various fruit-trees and vegetables; they also keep horses and cattle. They have mills which to the shores of the sea and for internal communication.

On the south of the valley of the Awaron extends a hilly region from sea to sea. Its upper surface is a continual alternation of descents and ascents, but the slopes are generally gentle. The Awaron, though a small river, is navigable for boats at high-water to the distance of about 10 miles; the tides rise 10 feet, and the river has little fall in its lower course. Canoes ascend it nearly to its source, which is at the foot of Maunga Taniva, a remarkable mountain, rising 1500 feet above the surrounding hills. The upper valley of the river is here and there clothed with groves of large trees. The whole valley of the Awaron contains about 120,000 acres of land. Within a short distance of the sea, due to the quality of the soil, the facility of cultivation, as well as of water-communication, the abundance of excellent wood and of other building materials, this tract is one of the most favoured in New Zealand. There are several European settlements. The Hills has more progress in civilization than in other parts of the islands; they cultivate, besides Indian corn and sweet potatoes, wheat, potatoes, vines, and various fruit-trees and vegetables; they also keep horses and cattle. They have mills which to the shores of the sea and for internal communication.

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land side. The only exception to this general description is the valley of the Kawa-kawa, an arm of the sea stretching back about nine miles into the interior, which, though it is navigable for several miles from its mouth. This valley contains a considerable amount of excellent land, and is very extensively cultivated by the natives. In this bay is the sand island of Kororatuka and the projected islands of Russell and Victoria, Many Europeans are settled on the shores of this bay and in the valley of the Kawa-kawa.

Between Cape Brett on the east and Hokianga River on the west the island is about 60 miles wide. From this line the coastline widens several hundred miles, and, though it runs in a continuous line, not interrupted by any indentation. Along the shores is a beach from 100 to 150 yards wide, which is partly covered with soft sand and partly by large fragments of pudding-stone. At the back of it rise sandstone cliffs to the height of 300 feet, and a tract of land from four to six miles wide consists of sandhills covered with a carex, and farther inland with a scanty vegetation of fern. Among these hills, and close to the sea-shore, rises Mount Mangapui, an isolated mass which gives a certain security against the sea-coast storms of the sea. Farther inland the country is a table-land some hundred feet above the sea-level. The highest part of this region frequently extends in a level plain for several miles. This soil is generally arid, resembling the heath in England, though it contains many areal, which are covered by sea. In depth, and rests on tough argillaceous earth. It is overgrown with fern, and in many places with shrubs, especially elderberry bushes: there are however many tracks which are depressed below the surface of the plain, and these after the rains are converted into swamps, which are generally overgrown with the flax-plant, and traversed by deep and narrow gullies. Where the plains approach the river-valleys and decrease in height they are covered with forest, consisting of kauri, kahikatea, and the native pines of the valleys. These forests contain many large timber-trees, and in no part of the island is the kauri-pine so abundant or attains such a size as in this region. The natives are mostly employed in felling and squaring the timber. The bottoms of all the rivers are bounded by hills of great height, which do not generally reach to the banks, and are often more than a mile from them; the bottoms are level, and have a somewhat clayey but fertile soil, being mostly composed of the detritus brought down by the rivers. The bottoms rise little by little from the sea, and the formation of all descriptions, especially the kauri-pine, except the alluvial tracts of recent formation and those lands which have been cleared by the natives for cultivation. They raise all the common productions of the island in abundance, and are a surplus, which is sent to the market and added to the profits derived from the timber, renders them more wealthy than the native inhabitants of other districts.

Kai-para Harbour is a large basin. The entrance is between five and six miles wide. Before it is an extensive sand-bank, which runs to sea six or eight miles, and extends from north of the northern head to south of the southern head, so that it appears, when seen from the westward, to form an approach. This sand-bank, however, is but inside this bank there is a deep channel at least two miles broad in the narrowest part, which affords a safe passage for large vessels. The tide rises ten feet at full and change, and rushes with great violence into the harbour, while, as before mentioned, the western winds, which blow without intermission during some parts of the year, and increase the current which sets into the harbour, are also a great drawback from the utility of this harbour, as they prevent vessels from leaving it. The river of Waikawe requires about 15 miles of navigation on both sides. There are several small navigable streams which are numerous at which a vessel is protected from all winds. Besides several smaller streams, three large rivers fall into the bay, the Wairoa, Otamatea, and the Kai-para.

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which leads to Auckland. Waiteheke is about 30 miles in circumference, wooded and hilly, and contains kauri-trees; but it has also many sheltered and cultivable small valleys. It has a harbour for small vessels, and there is anchorage for larger vessels in the channel which separates the island from the mainland.

The chief of the valleys between Kai-para, on the west, and the northern part of the Shouraki Gulf, is nearly covered with hills or small table-lands overgrown with fern; but their declivities towards the gulf are covered with fine timber, which is exported from the harbour of Manu-ku, and adds to the annual revenue of the district. From the north-west, 20 miles from Waitemata Harbour, a valley runs to the north: which is easy of access, and has depth of water sufficient for every description of vessels, and there is secure anchorage. Though the land available for cultivation is not of great extent, it has lately been laid out on the shores of the harbour.

Some miles north of Waitemata Harbour the hills sink down, and the narrow part of the island, which is between this harbour and the Manukau Harbour on the western coast, has a slightly undulating surface, on which several isolated hills rise to some height. The soil is of good quality, and fit for all kinds of horticultural and agricultural purposes. The harbour of Waitemata, on the southern shores of which the capital of New Zealand, Auckland, is built, is the western extremity of the gulf, and also has its ramifications towards the harbour of Manukau. The navigable channel by which the harbour is entered is only three-quarters of a mile wide, being narrowed by a reef; but within the channel widens to an average breadth of a mile, and is deep enough for vessels of great burthen of fathoms in the channel, and three and three and a half at the sides. It extends ten miles to the westward, and branches off at its western extremity into two arms, of which the southern, running towards the harbour of Manukau, is a river-like inlet, but adds to the difficulty of navigation for vessels for part and the harbour of Manukau there is only a portage of one mile and a half. This inlet however is only navigable for boats. Near the harbour of Waitemata is that of Tamaki, at the innermost corner of which a portage of only a mile brings the boats to the beach of Manukau. At the entrance of the harbour is a bar, with six feet of water at low tide, but vessels of 200 tons can enter it, and large barges can go to the portage.

Where the Gulf of Shouraki grows narrow, opposite the island of Waiteheke, the country rises to a higher level, and presents towards the gulf a hilly ridge, in which several narrow valleys open to the estuary of the Waio; they have a fertile soil, and contain settlements of natives. This hilly ridge runs in a south-westward direction, where it separates the valley of the Waio and of the Waikato river, and is known as the Waikato river; but sinks lower as it proceeds towards the source of the Waio, or rather the general level of the country rises higher. Between the upper course of Waio and Waikato only isolated hills and valleys are dispersed over the table-land. This chain of hills is mostly covered with bush, of which, in the west, is the kauri-trees, and, in the north, of basalt, and wood is only found in some small mountains and ravines. There are kauri-trees, but they are rather scarce.

The valley of the river Waio, which lies to the east of this hilly range, and begins at the most southern branch of the Gulf of Shouraki, is the largest known plain in New Zealand. It extends about 60 miles south, terminating in the low hills of Horomoro, where the river Waio originates, and then extends north for about 20 miles from the mouth, but grows narrower as it runs southward, but probably in no part does it fall short of 10 miles in width. The surface is a dead level, and large tracts, especially towards the gulf, are converted into swamps for the want of necessary drainage. In these parts the soil is almost sterile, and the swamps are not offensive, though in the upper part of the valley, nor large, but they increase in number and extent towards the mouths of the rivers, where the country is very low and subject to inundations. In these parts the soil is sterile and rich, and the swamps might easily be drained. But they are filled by sand brought by the Plume River, which, in this part, is a series of sand-hills, and is not offensive.

The plains of the Waio and Whangaroa are extensive, and there is subject to inundations. In these parts the soil is sterile and rich, and the swamps might easily be drained. But they are filled by sand brought by the Plume River, which, in this part, is a series of sand-hills, and is not offensive.

The country extending along the western coast of the Manukau, as far as the river Mokau, appears to rise more gradually to a higher level than the northern districts of the island. The shores have in many places a low sand-bank, and in others they are also very low, where the sea washes the base of steep cliffs composed of sandstone and conglomerate. For some miles from the sea the country exhibits very few signs of fertility, being
mostly overrun by a carex, or a stunted vegetation of fern; few bushes or trees are met with, except in the numerous ravines, which have a fertile soil, and where there are a few large trees. A few miles from the sea the country rises higher, and contains numerous hills whose declivities are gradual, and partly covered with fern and flax, and partly wooded. The soil of this tract is rather fertile, especially where it is loamy or the mould rests on limestone; and in many parts there are plantations.

The navigable carex, and about stunted a lat.) But hilly it is joined has is increased: in inland anchorage Kawia coves which running through the northern district of Eheimeanoumawu, the seaward headland, is one of the most important on the western coast of the island. It has a clear entrance about a mile and a quarter wide, with two fathoms at dead low-water of spring-tides. The tide rises 12 feet. The best anchorage is along the northern shore, where the depth varies from five to eight fathoms, in a small, irregular basin, and is entered by two rivers which descend from the high hills at the back of it; they are navigable for boats for some miles from their mouth. In all these harbours there are numerous settlements of natives, and some sea-fisheries.

The river Mokau rises in the Rangitoto Mountains, and runs through a very fertile and moderately hilly district, in which the natives grow potatoes, maize, melons, taro, and tobacco, and the flax-plant covers extensive tracts. The river Mokau is navigable for small vessels, but inside the mouth it is three fathoms deep, and forms a completely sheltered basin. The shores south of the river Mokau, and as far as that of Waiters, are elevated, and consist mostly of marl and a stiff blue clay, or a yellow sand which is 25 feet deep. This country above them is undulating and overgrown with ferns, among which are numerous groves of trees. The soil possesses a considerable degree of fertility, and the vegetation extends to the sea-shore. The country farther inland, to the north, is covered with a dense forest of Eucalyptus, and is overgrown with large trees. It is stated to be fertile, but it has not yet been explored.

Mount Taranaki or Egmont occupies the centre of a projecting headland, and is about 30 miles from the sea, and 3889 feet above the sea-level and above the snow-line. It is a perfect cone, from the base of which the country slopes slowly towards the sea on the north, west, and south; and on the east it is surrounded by higher, and which extends to the tangata Taranaki and the volcano of Tongoaro. The coast forms cliffs of moderate height, which consist of a yellow sandy loam, with a rich mould on the top, which increases in depth towards the foot of the mountain. Near the sea the rocks is to the place is generally 3 or 4 miles from the coast open, and covered with vegetation, especially flax and fern; in the little dales however there are groves of trees or swamps covered with bulrushes and reeds. A great number of streams which descend from Mount Taranaki surrow this region, and form small lagoons at short distances from the place where they reach the sea. The vegetation is very rich round these lagoons. Three miles from the sea the country is covered with a low shrubby forest; but in proceeding farther inland, many large forest trees, especially the rimu-pine, are interspersed, and they increase rapidly in number until a dense forest covers the whole country, which is almost impenetrable owing to the numerous creepers and thorny bushes which constitute the underwood.

Mount Taranaki is the western extremity of a volcanic region, which traverses the island of Eheimeanoumawu from south-west to north-east, and terminates on the north-eastern shores of the Bay of Plenty. The country above Mount Taranaki has been deeply eroded, and it is not known what vestiges of volcanic action are found in this region. But the Rangitoto Mountains contain the active volcano of Tongario and the extinct volcano of Ruapahu. North of the first-named peak is the lake of Taupo, which is formed by the rise of the volcanic formation, from the rents of which numerous hot-springs rise, and which are interspersed with mud volcanoes. Towards the shores of the Bay of Plenty is a large cluster of lakes, some of them filled with hot water, and others sur¬rounded by hot-springs and volatiles, and the whole of the Bay of Plenty itself is the island of Puhia-i-Wakari, or White Island, which has an active volcano.

The Rangitoto Mountains begin on the north with Mount Piringa, above mentioned, and extend south by east to the peak of Tongaro, which is about 1500 feet above sea-level. Their general elevation probably does not exceed 2000 feet above the sea, at least not north of Tongaro. This summit rises to 6200 feet, and that of Rangitoto the snow-drift is 2050 feet, and is supposed to be at least 9000 feet high. Between these mountains and in their neighbourhood the range appears to attain its greatest elevation. But these mountains occupy a comparatively small width, hardly more than four or five miles, according to the accounts of those who have traversed them. On the west of them extends a hilly region, whose general level is probably less than 1000 feet above the sea, but the hills upon it rise about 500 feet higher. On the east of the Rangitoto range is the basin of the Waikato river.

The Waikato river is the largest river in Eheimeanoumawu. Its source is in the Rangitoto Mountains. According to Mr. John Arrowmith's most recent and excellent map, it rises on the northern declivity of Mount Tongario, in a small lake called Rotuwhare, which is 17th feet below sea-level, or higher than the Lake of Thun in Switzerland. But Dieffenbach expressly states that this river, which is called Waikato by the natives, joins the principal stream, which comes from the Ruapahu. If this be the case, the source of the Waikato is near the mouth of the Rangitoto, and the stream to which they would both join it before it falls into Lake Taupo, by three branches, of which the largest is about 100 yards wide. This lake has an irregular shape. Its greatest length from south¬south-west to north-north-east is about 35 miles, and its greatest width 22 miles. The lake is 130 feet above sea-level, and indented. Several rivers fall into the lake from the south, and the common outlet of all of them is the Waikato. The lake is 1337 feet above the sea-level or higher than the Lake of Geneva. The Waikato river leaves the lake at the most north-east point, and flows 500 miles, or about 500 yards wide, and very deep. It runs first north-east, but afterwards in a general north-north-east direction, until it reaches 37° 30' S. lat., when it turns to the north-west, and is joined by its principal tributary the Waipa. In ap¬proximately 120 miles beyond Manukau it turns south, and falls into the sea. The whole course of the Waikato probably exceeds 200 miles. In the middle part of its course, the navigation, if not entirely interrupted, is rendered difficult by numerous rapids and falls, which together form a bay, but is a narrow channel, which at low water only vessels of about 30 tons can enter. But the headlands it is a full river, and when the tide is in it is navigable for large vessels for about 40 or 50 miles. It is used by it is hoped to be improved for a navigation as far as Lake Taupo.

This river rises in the Rangitoto Mountains north-west of Lake Taupo, and runs above 100 miles, of which about 80 miles are navigable for large boats.

The upper basin of the Waikato, or that which surrounds Lake Taupo, and extends south of it to the summit of the Tongario and Ruapahu, has that irregular surface which occurs in all countries which have been convulsed by volcanic agency: High and rugged hills rise to the lake on the north and west, and rise immediately from deep waters, to an elevation varying between 1000 feet.
1000 feet. The hills east of the lake are less rugged, and have a much more gentle ascent. At the southern extremity of the lake is a low alluvial plain, about 10 miles in length, and of a triangular shape. On both sides this flat is bounded by hills, which are broken by narrow ravines. The surface of a great part of this region is bare or scantily covered with mosses, lichens, mosses, and shrubs. The volcanic rocks have been so far decomposed as to form a mould the soil is fertile. The hot springs, fumaroles, solfataras, and mud volcanoes, are numerous. From some of the hot springs the boiling-water rises several feet high, as at the upper Siloam Springs, near the town of Katoa. Some miles north of Lake Taupo the basin of the Waikato assumes a different aspect. The surface of the country is broken into hillocks, irregularly dispersed over the plain, which is perfectly level. All these hillocks consist of tuft or of small pumice-stone cemented together. The level ground consists of the same materials, and as it has undergone only a small degree of decomposition, the soil is poor and maintains only a stunted vegetation of grass and fern. Further north the country improves, and the hillock surface, particularly the paddy of matai (Dacrydium matai) and totara (Podocarpus totara). North of this woody tract the surface consists of hills of moderate elevation, of tuft and small pieces of pumice-stone loosely cemented together by volcanic ash. The vegetation is less vigorous than on the plains, and hollows on the hills and the ravines have some better soil, and are overgrown with shrubs and trees. The lower and more level part however presents a dreary aspect, being clothed with a scanty vegetation of fern and coarse wiry grass, and here and there a stunted flax-tree. The pumice-stone has not undergone sufficient decay to allow the growth of anything else.

South of 38° S. lat. rises a hilly range, which divides the basin of the Waikato river longitudinally into two basins of which the eastern is drained by the Waikato, and the western by the Waipa. This hilly range, which is called Maunga Tautari, terminates near the place where the Waikato turns westward. The lower part of the basin of the Waika she is believed to contain about 60 millions of cubic yards of water, and to be fit for every kind of cultivation, but we have no particular account of it. It will however soon be cultivated, as it has the advantage of being separated from the river Waiko and the Gulf of Shouraki only by a gentle swell of the land, on which a few hills are dispersed. The valley of the Waipa, the largest of the tributaries of the Waikato, is described as one of the most fertile portions of New Zealand. It is about 100 miles long, and from 10 to 12 miles wide. The upper part resembles in many respects the low country on the east coast of the North Island, having a broken and undulating surface, the soil of which consists chiefly of pumice-stone, but the vegetation is more vigorous, and the more level places are covered with fern or coarse grass alternating with groves of the kahikatea, or swamp pine, which are supposed to contain about 60 millions of cubic yards of water, and to be fit for every kind of cultivation, but we have no particular account of it. It will however soon be cultivated, as it has the advantage of being separated from the river Waiko and the Gulf of Shouraki only by a gentle swell of the land, on which a few hills are dispersed. The valley of the Waipa, the largest of the tributaries of the Waikato, is described as one of the most fertile portions of New Zealand. It is about 100 miles long, and from 10 to 12 miles wide. 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The descent from the table-land to the low tract along the shores of the Bay of Plenty is hilly, and covered with forests, in which the tawai (Leiopusium nervosum), the totara (Podocarpus ferrugineus), and hinau (Euclea) are very rugged on the rocks, with narrow bases. The soil is pumice gravel, richly mixed with vegetable mould. Some of the forests are overgrown with ferns. The forest terminates abruptly, where the flat tract extending along the coast begins; but between the marshy ground and the forest vegetation is not continuous, and there are swampy valleys. The flat tract, from 4 to 6 miles wide, exhibits a vigorous vegetation, indicating the richest soil; the chief plants are flax, fern, and venusia.

On the Bay of Plenty is the harbour of Tauranga, the only opening in the coast for the passage of vessels. There are four fathoms of water over the bar, the channel is about 100 yards in breadth, and, owing to its bending at a small angle, large vessels would have great difficulty in entering it. The great number of pipes that are mostly derived from the volcano of the river Waiko, is to be shipped here. Between Tauranga and Katoa, which lies about 20 miles north of it, the coast is formed by several large islands, which in structure resemble the island of Hawke's Bay, but they are separated from it by narrow channels. Their fertility is equal to that of the low tract along the shore.

In the Bay of Plenty is the island of Tuhua, or Motu Island, which is of considerable extent, and consists of tuffs, bombs, and small pieces of pumice-stone cemented together by volcanic ash. It is inhabited by about two hundred natives, who cultivate the land, and occasionally provide passing whalers with provisions. White Island, or Puhiu-i-Waikari, is small and low; it contains an active volcano, similar in nature to the volcanos of the South Island, of which several cargoes have been brought to Europe.

Till lately it was generally supposed that the eastern portion of the Baikinomauwe, or the large pennisula between the Bay of Plenty and Hawke's Bay, was a high mountain, but it has since been found that no mountains are visible from the table-land of Rotuma, which lies contiguous to it on the north-west, and it is at present the prevailing opinion that this extensive portion of the island probably does not differ materially from the surface, soil, and fertility of the last-mentioned table-land, and that it may eventually become a rich coast. There are however a few summits, which attain a great elevation, as Mount Edgecombe, or Putawata, situated on the north-east coast, and the Maugul, or Mount Ruahine, but they are isolated, and not connected by continuous ranges. The coast-line between Cape Runaway or Te-Kahu, and Table Cape, or Mahia, has numerous indentations, but they are all open, and offer no obstruction to the ships, which can be landed on, except the lower part of the coast of the island. The same is stated to be the case with Hawke's Bay.

No portion of the Baikinomauwe hitherto described can be called mountainous, so far as it is known, though there are a few mountains on the upper drainage of the Kaikori river, and its tributaries in the extreme north and west of the country, on the south-east of which there are a few mountains. But the most southern part of the island is denoted by the name of mountainous: mountain-ranges traverse the whole coast south of a line drawn from Cape Matas-mati in the western coast, to Cape Egmont on the western, with the exception of the eastern coast. They may justly claim the name of ranges.

The eastern half of this region is unknown, with the exception of the coast-line, which, from Cape Matas-mati, situated at the most southern point of Hawke's Bay, runs...
south-west-south to Cape Palliser, or Ka-wa-kawa, a distance exceeding 150 miles, without any indentation which offers a shelter even for small craft. The shore is lined with high rocky cliffs, and behind them the more elevated country is covered with trees. This leads to the supposition that there is a high tract of land which extends from the sea extending over the whole country, and this supposition is supported by the circumstance that not even the outlet of a small stream occurs. It must indeed be an inhospitable country, for it is said that there are not even Eskimo huts present.

Cape Ka-wa-kawa constitutes, with Cape Campbell, the southern entrance of Cook's Strait. West of the cape is a wide bay, which on the west is sheltered by the high lands terminating with Baring Head, or Cape Tura-kia. It is open on the east to the river Manawatu, which affords no safety or good anchorage. It is appropriately called Useless Bay, also Palliser Bay, and by the natives Wai-rara. At the innermost recess of the bay is the mouth of a river, the Wai-rara, which is stated to drain a wide valley which extends far inland between mountain-ranges, but we have no description of it.

West of this bay a headland projects into Cook's Strait in a direction from south-west to north-east. It is traversed by two chains of mountains which terminate in Baring Head on the north, and Cape Palliser on the south. Between these rocky caps a small bay extends northwards, called Port Nichol-son. It is surrounded by high and steep rocky hills, generally covered with wood, except opposite the entrance of the bay, where 40 miles of open land appears in a mile and a half in length. This leads to the alluvial valley of the river Hutt, or Erington, which is surrounded by steep mountains, and extends seven miles inland, where the hills approach each other and form the gorge of the river. The whole region is more, being the valley generally narrow, and enclosed by steep hills, but it widens in some parts to a mile, and in other the hills form platforms on their declivities, which are fit for cultivation; but above the alluvial tract the available land is of the same degree to form areas and is covered by ravines, in which the natives have a few plantations. The bay extends about eight miles from south to north, and that portion of it which is adjacent to the eastern hills is exposed to a heavy swell during southern winds. The street here is very fertile. Above the valley a generally narrow, and enclosed by steep hills, but it widens in some parts to a mile, and in other the hills form platforms on their declivities, which are fit for cultivation; but above the alluvial tract the available land is of the same degree to form areas and is covered by ravines, in which the natives have a few plantations. The bay extends about eight miles from south to north, and that portion of it which is adjacent to the eastern hills is exposed to a heavy swell during southern winds.

The two mountain-ridges which enclose Port Nicholson and the valley of the Erington unite at the source of the river, and are there called the Tara-run range. This chain, consisting of several ridges, runs south and north, and extends to the elevated peak of Rua-pahu, where the Rangi-oto Mountains begin, which are to be considered as their northern continuation. The range of the Tara-run runs broken about the middle by the river Manawatu, and has a portion of it which lies north of the coast by which the river escapes is called the Rua-Wahine range. The geological structure of the Tara-run Mountains is argil-laceous schist, interrupted, especially on the western side, by bulky and irregular dykes of red, black, and greenish Lydian, and the whole is a very coarse and granular, and forms a good stone for building purposes. These mountains apparently do not rise more than 3000 feet above the sea-level. Their external figure is very uniform. They extend in longitudinal ridges with narrow intervals of valleys, which are sometimes flooded. In many places they are overgrown with forest, in others the woody region does not quite reach to the top. They send off from their sides short ramifications, which form masses rather than valleys, from which small rivers flow to the sea or the lower country. As these rivers flow between hills which give them many tributaries, the violent rains often swell them suddenly, and the streamlet becomes a mountain torrent. It then overflows the alluvial land on its banks, and carries with it the stems of large trees, which either remain fixed in its bed, or are buried near the sea-shore, when driven back and left dry by the tide. Quantities of drift-wood are found on the shores of Cook's Strait.

In the country extending from the Tara-run Mountains to Cook's Strait the coast is frequently laid up with Parahou, filled up with the offsets of the mountains. At the last-mentioned place the chain begins to recede from the sea-shore, increasing its distance from the coast-line as it runs north. The mountains are now succeeded by a belt of scrubby sandy hills, crossing it extended through this distance by the widening as the mountains fall back, till, at the Manawatu river, the sandy belt is nine miles broad. Where this belt is traversed by rivers there are large tracts of alluvial soil, cultivated by a comparatively dense native population. It is at this point that the river Manawatu enters into the Port of Mount Ruapahu, and runs along the eastern side of the Rua-Wahine range, southward, in a valley between mountain-ridges, about 70 or 80 miles, when it pierces the range through a cleft by turning westward, and enters the lower country along Cook's Strait. As with all the rivers in Cook's Strait, the force of the current is not strong enough to remove the sand which is thrown up at its mouth by the south-westerly and north-westerly winds, and its depth at the bar is only 3 feet at low water; the tide rises eight feet. The breadth at the mouth is 2000 yards at half-tide. Inside the bar the river deepens sufficiently to admit vessels of about 50 tons, and there is a well defined channel with from one and a half to five fathoms of water, for some miles. The stream is about 300 yards wide. This forest spread over the more elevated land to the base of the mountains. Through all this tract the river is sluggish, and well adapted for steamers. This description applies to the country which extends from the Manawatu to the Wanganui river.

The river Wanganui rises on the western declivity of the volcanic peak of Tongariro, and runs with numerous windings to Cook's Strait. The mouth is more than half a mile wide, and lies on the bar eight feet of water. Vessels of 230 tons have passed over it, but at low-water the sea breaks across the bar. Inside the bar the river grows deeper, and is about 300 yards wide. The banks are here low and sandy, and covered with drift-wood and pumice-stone, which are driven down the river from the surrounding source. At the distance of some miles an extensive flat extends along the banks, which is bare of timber and even of bushes, and in its natural state is covered with flax and fern; it is fine ground for grazing. About 30 miles from the mouth the river flows between hills, which are well wooded, and extend to the base of Mount Tongariro. But in approaching that summit, the country is again more open and flat, though much broken. The natives descend the Wanganui in their canoes from within a short distance of its source.

The coast from the Wanganui to Cape Egmont presents a cliff of moderate height, on the summit of which the land extends in a level plain, which rises gradually to the base of Mount Taranaki. Not far from the sea, and some miles inland, this tract is without trees or bushes, overgrown with fern and flax; it appears to be fit for agricultural purposes or grazing. Further inland the plain is covered with forests, whose vigorous growth shows the fertility of the soil. The drift-wood, which is valuable, is common on Mount Taranaki, or from the hilly tract which runs from that summit towards Mount Tongariro. On these rivers there are numerous native settlements.

Respecting the soil of New Zealand, the alluvial tracts, where they are heavy or hilly, are not so good for crops as the soil, are very fertile, and yield good returns, but the labour of the clearing is very great. The swampy tracts, especially those which are covered with flax, make good land when drained, but the drainage is very expensive. Where the soil is sandy, or the thick flax is found on dry ground, the soil is only of middling quality; but where the fern is short, the soil is good. The wooded slopes of the mountains have generally a good soil, but the thin coating of mud which adheres to their steep sides is only supported by the surface
roofs of the trees, which spread themselves over the ground like a fabric of net-work. When these are removed, the heavy rains wash down the vegetable deposits, and lay bare the sterile substratum of rock or clay. Where the sides of the mountains are formed in terraces, the vegetable earth is not subject to be washed down, and it generally yields a fertile soil. The natives in most cases have established their plantations in the alluvial valleys or in such terraces. In the volcanic regions, the quality of the soil depends on the degree of decomposition which the surface of the volcanic matter has undergone.

The South Island, which separates Eheineomauke from Tavai Poemamoo, is about 150 miles long, and lies from south by east to north by west. At its southern entrance, between Cape Kawakawa in Eheineomauke, and Cape Campbell in Tavai Poemamoo, it is about 50 miles wide; but at its northern and eastern sides, Cape Farewell in Tavai Poemamoo, and Cape Egmont in Eheineomauke, are more than 100 miles distant from each other. At the narrowest part, opposite Cape Te-ra-witi, the strait is not quite 30 miles across. The tide runs from the south at high water, and has a spring of 3 to 4 feet. The prevailing winds near the southern entrance, the greater part of the year, are from the south and south-east, and often increase to heavy gales, augmenting the rush of water through the straits, and making considerable inroads on the eastern and northern sides of the strait. The prevailing winds all the year round blow from the north-west and south-west, and cause a heavy swell to set against the shores of Eheineomauke, between the island of Kapiti and Cape Egmont. This swell has no harbour, and to a great distance from the shore is shallow, vessels are obliged to keep a good offing. The island of Kapiti, called by Cook the Island of Entry, is the most remarkable of the islands of the strait. It is about 25 miles in circumference, and contains a ridge of hills, rising in some places to the height of 600 feet. These hills descend abruptly to the westward and eastward, but at the southern extremity they are low and undulating. At the north-eastern point is an extensive alluvial or lagoon in the sea; it is about two miles wide, and is covered with swampy vegetation. A great increase of the island is cultivated by the natives, and produces potatoes, cabbage, turnips, and Indian corn. It is the centre of an extensive whale fishery. To the east of the southern extremity of Kapiti are three small islands, which, together with Kapiti, form a range which is sheltered from the prevailing north-west winds by Kapiti, and from the south-east winds by the three islands, and affords a safe anchorage for vessels.

Climate—The climate of New Zealand is frequently compared to that of Great Britain, and certainly there is a great similarity between the two countries, so far as respects the frequent changes of the weather, the moderate heat and cold, and the limited annual range of the thermometer, the limited daily range of the thermometer, and the wide range of the thermometer; but the climate of New Zealand is inferior to that of Great Britain because it is colder. The climate of New Zealand and Great Britain is subject to the same changes of the seasons. All these peculiarities are chiefly, if not entirely, to be ascribed to the insular position of both countries; but they are more distinctly marked in New Zealand than in Great Britain, because Great Britain is only at a short distance from the continent of Europe, and its climate must be affected by the changes of weather which take place on this continent, but no country of any extent is near enough to New Zealand to affect its climate.

There is another similarity between the two countries. Those parts of Eheineomauke which are nearest to the equator are only hills, no eminence probably being found north of 38° S. lat. which exceeds 1500 feet, and these parts may be considered to form the most central district of England; but those parts of the island which lie nearer to the pole rise into mountains, which however, with the exception of a few peaks, do not much exceed the elevation of the mountains in the northern part of England. Likewise Eheineomauke is the Llanlith of the islands of Europe, but the mountainous part of Eheineomauke is very narrow, whilst the mountainous part of Eheineomauke is of considerable width. In England, the contrary is the fact. This difference in the conformation of the northern and southern districts of Eheineomauke, combined with the difference of the geographical position, must of course correspondingly affect the climate of these two portions of the island.

We are in possession of meteorological observations made at Auckland in Hauraki Gulf, and at Wellington in Port Nicholson; and though these observations have only been carried on for a twelvemonth, and these facts cannot be considered as conveying exact information; yet the climate of these places, as they seem better adapted to give a notion of the climate of the different portions of the island, than the observation of busy travellers.

Mean of Monthly and Annual Temperature at Auckland, Wellington, and London.

<table>
<thead>
<tr>
<th>Month</th>
<th>Auckland S. lat. 36° 51'</th>
<th>Wellington S. lat. 41° 7'</th>
<th>London N. lat. 5° 21'</th>
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<tbody>
<tr>
<td>Dec.</td>
<td>64° 4'</td>
<td>64° 7'</td>
<td>59° 26'</td>
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<tr>
<td>Jan.</td>
<td>69 3'</td>
<td>66 4'</td>
<td>62 97'</td>
</tr>
<tr>
<td>Feb.</td>
<td>67 0'</td>
<td>64 8'</td>
<td>62 90'</td>
</tr>
<tr>
<td>March</td>
<td>65 3'</td>
<td>62 5'</td>
<td>57 70'</td>
</tr>
<tr>
<td>April</td>
<td>50 0'</td>
<td>63 5'</td>
<td>50 79'</td>
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<td>May</td>
<td>51 8'</td>
<td>51 8'</td>
<td>42 40'</td>
</tr>
<tr>
<td>June</td>
<td>52 1'</td>
<td>51 3'</td>
<td>38 71'</td>
</tr>
<tr>
<td>July</td>
<td>49 5'</td>
<td>48 7'</td>
<td>36 34'</td>
</tr>
<tr>
<td>Aug.</td>
<td>54 3'</td>
<td>51 2'</td>
<td>39 69'</td>
</tr>
<tr>
<td>Sept.</td>
<td>54 8'</td>
<td>53 3'</td>
<td>42 01'</td>
</tr>
<tr>
<td>Oct.</td>
<td>56 8'</td>
<td>59 2'</td>
<td>47 41'</td>
</tr>
<tr>
<td>Nov.</td>
<td>58 8'</td>
<td>59 3'</td>
<td>50 13'</td>
</tr>
<tr>
<td>Dec.</td>
<td>51 3'</td>
<td>60 3'</td>
<td>61 7'</td>
</tr>
<tr>
<td>Summer</td>
<td>67 3'</td>
<td>68 3'</td>
<td>71 7'</td>
</tr>
<tr>
<td>Autumn</td>
<td>60 1'</td>
<td>59 3'</td>
<td>50 3'</td>
</tr>
<tr>
<td>Winter</td>
<td>51 9'</td>
<td>50 4'</td>
<td>38 2'</td>
</tr>
<tr>
<td>Spring</td>
<td>57 4'</td>
<td>57 7'</td>
<td>48 3'</td>
</tr>
<tr>
<td>Annual</td>
<td>59 2'</td>
<td>56 4'</td>
<td>49 6'</td>
</tr>
</tbody>
</table>

If we consider that the difference of latitude between London and Auckland is only 14° 40', and that of the mean annual temperatures is 9° 50', it appears that the climate of Eheineomauke is rather warmer than could be expected from its mean annual temperature. The difference of latitude between London and Auckland is more influenced by the vicinity of the continent in winter than in summer; for in summer the difference amounts only to 5° 8', while in winter it is 13° 7'. The temperature of the air is more equable at Auckland than at London; as at Auckland the difference between the hottest and coldest months is not more than 18° 9', while at London it is 26° 6'. Dieffenbach says, The place in our northern hemisphere corresponds in its mean annual temperature to Auckland is Montpellier (43° 36'), but in the last place the difference between the hottest and coldest months is 68°. The heat of the warmest month in Auckland corresponds to that of the warmest month in Vienna (48° 12' N. lat.), but its coldest month is somewhat below the coldest month of New York (36° 49' N. lat.). The daily range of the thermometer, which frequently does not amount to more than 4°, rarely probably never exceeds 8°; but on the table-land surrounding Lake Taupo, which may be considered as high above the sea-level, it sometimes amounts to 25°, and in these parts the ponds and swamps are sometimes covered with ice about half an inch thick. On the coast a never experienced: the thermometer never descends below 30°. On the table-land the trees shed their leaves, but along the western coast they are sometimes covered with ice about half an inch thick. On the coast there is never experienced, the thermometer never descends below 30°. On the table-land the trees shed their leaves, but along the western coast they are sometimes covered with ice about half an inch thick.

The climate of New Zealand is very humid. In the months from April, 1841, to February, 1842 there fell 34-49 inches of rain in Wellington. In London the mean annual quantity of rain is 34-10 inches, but in some districts in the West of England double that quantity falls. Dieffenbach thinks that more rain falls at Auckland than at any other place in the world; but along the western coast they are sometimes covered with ice about half an inch thick.
or driven away by the winds. This abundant moisture enders vegetation so vigorous, that it covers even the tops where only a thin layer of vegetable mould is found: it is not injurious to health, as the country is generally so well drained that swamps are comparatively rare and of small extent; besides, it feeds the numerous streams and rivulets, which render the island one of the best-watered countries on the globe. Rain falls in New Zealand in all months of the year, but the largest quantity falls in winter and spring.

Every part of New Zealand seems to be subject to almost continual winds and to heavy gales. The winds blow always, and continues to the middle of April. The weather is agreeably warm; showers fall frequently, but they are short; and the winds, usually blowing from the south, rarely become gales. After the middle of April the weather is more variable, the winds increase in force, and become chillier. This weather continues to the beginning of July, when the bad or tempestuous season begins. Heavy rains occur almost daily, and sometimes they continue for many days together: the wind is almost constant, and often blows with the strength of a hurricane. At Auckland the fair season lasts from October to April and even May. It is regularly interrupted by the heavy rains which occur at the full and change of the moon, and are attended by gales, thunder, and lightning. During the latter part of the year the winds are frequent, and the westernly blows with considerable force. In December and January regular land and sea breezes are experienced. The sea-breeze sets in from the north-east in the forenoon, and from the south-east at night. The thunder-forms are frequent in August, and sometimes heavy.

Earthquakes have been experienced at several places, but the shocks have always been slight, and have caused no damage.

Productions.—Two plants were cultivated by the natives at the time of the arrival of the Europeans, the taro (Colocasia esculenta) and the kumara, or sweet potato (Convolvulus batata). Among the fruit-trees, the most remarkable is the Araucaria, of which the undeveloped flat leaves are made into packing cases and eaten by cattle. The leaves of the Piper excelsum are used as tea. Some shrubs bear berries, which are much liked by the natives, especially the Solanum lavatium and the elderberry-tree (Coriaria aquinata), which are found in abundance, and which produce violent symptoms if eaten by cattle.

The greater portion of the island is still covered with forests. There is a great variety of trees, and perhaps in no part of the globe do they attain a larger size and exhibit more luxuriant vegetation, which is to be attributed to the humidity of the atmosphere. There are eleven species of Coniferæ and Taxaceæ, and they produce the most valuable timber. Among them is only one coniferous tree, the lance-leaved (Phyllocladus trichomanoides), miro (Podocarpus ferrugineus), totara (Podocarpus tootara), mai (Dacrydium maingayi), kawaka (Dacrydium plumulosum), kākākatea (Dacrydium excelsum), rimu (Dacrydium epi- caleum), huta (Dacrydium cupressinum), and another Podocarpus. Other very useful timber-trees are Leiospermum racemoseum, some kinds of Leptospermum and Metrosideros, the Knightia excelsa, Laurus tanarai and Laurus nuts, and Phormium tenax. None of these trees however have hitherto been cultivated for export, but several kinds of native trees have been introduced by the natives to make clothing, and considerable quantities of flax obtained from it are exported; but since the demand for provision vessels which have increased the value of the labour, the natives have gradually ceased to prepare this article for the market. Many swamps are overgrown with a kind of bulrush called raupu (Typha australis), which is a useful buildingmaterial for the natives. The houses of their houses, of which they tie in bundles with a climbing fern: these houses and roofs are impervious to rain.

The most important of the plants introduced by Europeans is the potato, which is extensively used by the natives, partly for food and partly for exportation: every vessel that touches at the island takes large quantities of them. Next in importance is the Indian corn, which is grown everywhere, and in the northern district forms an article of export. Sugar-cane was introduced by the missionaries about 20 years ago, and its cultivation begins to spread. Other grains are not grown, but it is thought that all of those which are cultivated in Europe may be grown, rice excepted. Turnips are very extensively cultivated. They are dried in the oven, wind, or sun, and they keep for a long time. The vegetables are pumpkins, shallots, onions, garlic, beet-root, endive, celery, leeks, purslain, mudishes, Spanish radish, Spanish onions, cabbages, broccoli, artichokes, cucumbers, capsicums, Chilli peppers, and mustard. The pigs have been planted in Eheinoumau, and most of them succeed very well, especially in the northern districts, as some large fruits and the wild pigs are used. Some attempts have been made to introduce the fruits of India, but without success. The bananas and mango-trees do not flourish. Tobacco is cultivated at several places by the natives for their own consumption, and the sugar-cane succeeds very well at Hokitika.

The dog, a smaller variety of the Australian dingo, existed here at the arrival of the Europeans, and is still, though rarely, met with, as almost the whole race of the island has become a mongrel breed. This was the only domestic animal. The natives have succeeded in introducing the horse, cow, ass, sheep, and pig. Pigs are very numerous: they are easily fed and fattened on the fern-root. The other animals are not yet numerous but they succeed pretty well, except sheep, for which the climate is suitable, and cattle, except the exception of a few tame. No wild animals are found in Eheinoumau, with the exception of a kind of bat, called Mystacina tuberculata by Gray. Formerly a native rat, which was eaten by the aborigines, was very common, but it has been nearly exterminated by the Europeans, and is now only found on the table-land of Rotuara. The sea contains four kinds of seals: the bottle-nose seal (Phoca enrona, Linn.); the sea-bear (Phoca hispida); and the sea-bear (Harrazus); and the sea-bear (Pho- lauaus). Their great number, and the scarcity of taking them, first attracted Europeans to the is.
but they have nearly exterminated these animals, and about 20 years ago they were obliged to abandon this branch of industry. There are also eight kinds of whales, the sperm-whale (Physeter macrocephalus); the humpback (Balena gibba); the fin-back (Balena physalus); the pig-backed balaena (Balaenoptera physalus); the berg whale (Balaenoptera musculus); the tuborh, or right whale (Balena antipodum; Gray); and the razor-back. When the seal fishery began to fail, the Europeans directed their industry to the whale-fishery, and with great success. This fishery is carried on partly off Tann's Strait, and partly along the eastern coast of Easheimouawe. The number of whales taken annually by the eight establishments in Cook's Strait is, according to Dieffenbach, 120, and as each whale on an average yields six imperial tons of oil, the aggregate amount is 720 tons, which sells in the London market for 271. The value of the oil therefore is about 20,000 L., to which sum 3000 L. must be added for the whalebone. Dieffenbach however observes, that the fishery has been decreasing for some time, because only the females are caught, and the right whale yields very few. It is consequently a very valuable article of food. Like the shells found in the other parts of the southern ocean, many of these are of a larger size and brighter colours than the species found in the same latitudes in the seas of the north temperate zone of the western hemisphere. In Dieffenbach's work 240 species are enumerated. Very little is known respecting the metals. Gold and silver have not been found; but Dieffenbach states that from the island of Otau, or Great Barrier Island, north of the North Cape, and on the south side of Shouraki Gulf, he obtained specimens of a copper-ore, some of which contained nearly 25 per cent. of copper. Iron-ore is said to exist at several places; coal has been found in the neighbourhood of Hokitanga and at some other places, and also in Teuam's Bay in the island of Tavai Poennamoo. Thick layers of lignite are observed in the cliffs which skirt the western and eastern coasts, but especially in the former. Limestone is found on the west coast on the drier inlets, and some limestone rocks would yield valuable building material. Rocks of this kind are fitted for building materials. Slates are met with in many places. Immense quantities of sulphur could be collected in the volcanic region.

Population and habitation.—The population is composed of European settlers and of the native tribes. The natives call themselves maoi (aborigines), in contradistinction to the foreigners, or paheas. Their number, according to a rough estimate of Dieffenbach, is about 1150. The most intelligent tribesmen of the island stood the defeat of their fellow countrymen with the greatest calmness, and the race was entirely held in the same style, which is one of the great characteristics of New Zealand. The form of the cranium approaches that of the European: in general however it may be said to be of longer dimensions from the forehead to the occiput. The forehead is high, but not very full in the temper regions. The coronal ridge is ample, and there is no coronal suture. The occiput is fully developed. The colour is a light clear brown, varying very much in some persons it is darker, and in others paler, but in all persons it is lighter than that of the islanders of the south of France. The nose is straight and well defined, often aquiline; the mouth generally large, and the lips many persons thicker than those of Europeans. The hair is generally black, and lank or slightly curled. The residuals are white, and some have a thicker and finer texture, and fact are well proportioned. The features are in general prominent, but regular. The other race is distinguished by a less regularly shaped cranial, with a more regular face, much larger, and with a wider forehead, the nose rather more compressed on the sides, by full and round cheeks, and a wider face, and finer hair. The women have coarse hair, which is curly, but not woolly, with but a deeper colour of the skin, and a short and rather proportioned figure. But in all tribes, and in all ages these two races are mixed together, and there is no time or place where one is to be distinguished from the other.

Though there are reasons for considering the natives derived from two different races, this fact is not supported by the language, which is derived from one stock, and does not vary very little from that spoken in the Society and Samoan Islands, which lie on the opposite side of the globe. The languages of the three groups is less than that existing between Dutch and German, as a native of Tahiti on arriving in New Zealand immediately understood what was said in the language of the natives, which is not the case with the Dutch. The difference is greater respect to one another.

It is a well-established fact that this language is derived from the same stock as the Malay language, but of that of the Malays is greatly enriched by foreign words from the Arabic, Sanscrit, and other languages. It is consequently the oldest of the aboriginal until the missionaries and other Europeans produced new ideas and new signs for them.

When the voyages of Cook first made us acquainted with New Zealand, the inhabitants were considered as the most warlike of all the indistinguishable countries of the Pacific. They derived their food from plants which they cultivated, lived in houses constructed so as to prevent them against rain and the weather, were possessed of war-canoes, and wore more clothing than the people of the other islands. But they were divided into many races which were frequently at war with one another. The New Zealanders had not been united in one political body was probably to be ascribed to the numerous islands and steep hills, which afforded to the tribes great opportunity for confederacies or independence. On such hills they built villages, which were fortified with palisades and ditches, and to which small bodies of men could retire when attacked by an enemy. The fortresses were called pa. Their wars were on a large scale, and as they were but a few in number, they began and conducted the battle, and themselves killed and eat their prisoners. Women and children were carried off as slaves. These wars greatly impeded their progress in civilization. But as all the tribes were armed in the same manner, and had not a superiority over another to be able to exterminate them.

The intercourse of the natives with Europeans received a great change. The New Zealanders became acquainted with the use of fire-arms and adopted them as the most efficacious instrument of defence. If firearms had been distributed equally among all the tribes, they would probably have maintained the same relative power in which they stood before that time. But some tribes were more easy of access to Europeans, and they obtained them in the advantage of the others. The tribes which inhabited these districts obtained from the strangers in exchange for provisions, so many guns, that they immediately acquired a superiority over their neighbours, and this circumstance led to the annihilation of several tribes which were inferior to them in numbers. This has taken place within the last forty years, the island has lost the greater part of its population. It is even probable that the whole race would have been exterminated, if the missionaries had not arrived. Other Europeans who were on the island had an interest in inhabitants of this kind, but the missionaries had no such interest, and tried to put a stop to the wars. They have succeeded in the greater part of the island, and even in 1841 some wars were still occurring.
on between those tribes among which the influence of the missionaries had not yet been fully established.

Women are better treated than is usual among tribes which have not made great progress in civilization. The wife is the constant companion of her husband, and they divide the domestic labours between them. The care of the plantations, manufactures the mats, and looks after the children; he constructs the house, and goes out to fish and to war. The affection which the women bear to the men, is extrinsically regulated; they frequently shoot suicide by hanging or drowning themselves, on the deaths of their husbands, by natural means or in battle.

Parents sometimes commit suicide on the death of their children.

A chief person in each tribe is called ariki, and his dignity is hereditary. His authority however is limited to the assembly, which is composed of all the members of the tribe, where his opinion on the affairs of the tribe is of great weight, but he is not invested with any part of the executive. He receives presents from friends and relations, but they are not compulsory or numerous. Each tribe is composed of free men and slaves. The ariki and each free man possess land with well-defined boundaries, and in disposing of the land of a tribe every one can sell or retain his own. It is, in Doubtless Bay, considered the lord of the soil. The slaves are the prisoners of war, male or female, and such of their children as are born in slavery. They have to perform the greater part of the agricultural labour, and are the property of their master, which they never lose, and which is not always considered quite independent of another. They are kept together more by custom and relationship than by any law. When one of them has sufficient authority with a number of indi- viduals, to whom he can refer to his person, build a pa, and found a new tribe.

Their religion is confined to a belief in the influence of spirits on the destiny of men. These spirits are called tua and turua. Atua is properly the deity, though, it is thought, from different parts, and is represented by so many separate spirits; the wairua are the spirits of the deceased, invisible and capable of influencing the fate of persons either in a friendly or in a hostile manner. Their priests are only considered as conjurors and physicians. But at present, as in the majority of the New Zealanders have been converted to Christianity.

The most singular custom among the New Zealanders, as well as among the inhabitants of many other islands dispersed over the Pacific, is what is called tapu, which signifies prohibited. The tapu is attached to different persons, different objects, a canoe is a tapu, and is considered to be caught by the potage of food or drink, but are fed by others until the tapu is taken off, which is done by the priest or priestess by some simple ceremonies and prayers. The breaking of the tapu, if the crime does not become known, is punished by death. On the other hand, if the crime is discovered, it is punished by him whom it concerns, and often becomes the cause of war.

The natives have considerable talent for the mechanical arts, and a great inclination to cultivate the land. Cook observed that when they do not engage in war, they are employed in constructing houses, which were eighty feet long, and constructed with considerable ingenuity. Diefenbach found in several of their pa's, or fortresses, houses with pillars, which were covered over with carved figures: they were executed with great skill and neatness, and have a reference to the military exploits of their pos- sessors.

Though the missionaries have not yet resided thirty years on the island, there are now few persons who had not learned, and even those who live in the country which have only occasionally been visited by the missionaries have acquired these elements of civilization by mutual instruction.

History and Colonization.—There is some reason for supposing that some Spanish navigators discovered New Zealand in the sixteenth century, but nothing is on record which can prove it. We must therefore consider that the islands were discovered by the Dutch navigator Abel Tasman, who reached the west coast of Tavai Poenamoom 149 in December, 1642, near 42° 10' S. lat. He sailed along the coast northward, and at the western entrance of Cook's Strait in the wide open bay called on the coast of New South Wales, but by the Frenchman D'Urville, Tasman's Bay. Here he anchored in a harbour, which he called Massacre Bay, as four of his seamen were killed there by the natives. After taking a few prisoners and making friendly overtures to the eastern coast of Eheinemouani to the most north-west cape, which he called by him Cape Maria van Diemen. From that time New Zealand was considered a part of the Australian continent by the geographers of that time. No European seems to have visited it till the time of Cook, when, in his first voyage, spent nearly six months on the coasts, between 1769 and 1770, during which he circumnavigated the islands and surveyed the coasts. In December, 1769, a French ship commanded by Surville anchored for some time in the Bay of Tauranga, which is now called and is situated near the coast of New Zealand. In 1772, two French vessels, under the command of Marion and Crozet, sailed along the west coast of Eheinemouani and remained for some time in the Bay of Islands, when Marion and 27 Frenchmen were killed by the natives of the New Zealand in his second voyage three times, and in his third voyage for the fifth. Vancouver also visited it in 1791, but merchant-vessels came to it only once during the last century. In fact, these remote seas were hardly visited by trading vessels before the foundation of the British colony at Port Jackson in Australia.

When the colony at Port Jackson had gone through its first trial and began to rise, it began to throw itself over the whole of the open coasts and to proclaim the British law and the British claim with complete success. The first vessels, which entered these waters, were sent by the government of the British crown into the sea in the east New Zealand. As the number of whalers was immense, they were allowed to remain, and they soon learned that provisions and other necessary of life were to be got much cheaper and with less labour in New Zealand than at Sydney, and thus New Zealand began to be the resort of the whalers, who visited the Bay in large numbers without being troubled by any of the geographical position and the excellence of its harbour. To facilitate the intercourse between the natives and the crews of these vessels, a few English settled in that harbour in the year 1816. In the year 1824, and the same period the New Zealand flax began to be considered a useful article, both in England and in New South Wales, and many vessels visited the islands to procure it. The tracts where the Phormium tenax grows in greatest abundance are situated on the west shores of Eheinemouani; and settlements were made there in order to get cargoes for the vessels whose arrival was expected. During the first twenty years of the present century the coasts of Tavai Poonamoom and of Cook's Strait were overrun by sealers and every direction, who caught many thousands seals every season; the skins were sent to China, where they fetched a high price. When the seals began to fail, the whale fishery in Cook's Strait was established. This led to the establishment of several British settlements on the west coast of New Zealand. In that same period a considerable number of Englishmen had settled in Eheinemouani ten years ago. Most of them had married native females, and finding that the country possessed a considerable degree of fertility, that they began to cultivate the landproperty before a regular colony had been established. Meanwhile the Church Missionary Society had directed its attention to the natives of New Zealand, and sent several missionaries in 1814. They were soon followed by some Wesleyan and Roman Catholic missionaries, though their labours were not attended with immediate success, they have so far succeeded, that at present the majority of the natives are Christians, and have learned to read and to write.

The English government, having been informed that every foot of ground in New Zealand was the property of the natives, has directed the attention of the natives to New Zealand, and sent several missionaries in 1814. They were soon followed by some Wesleyan and Roman Catholic missionaries, though their labours were not attended with immediate success, they have so far succeeded, that at present the majority of the natives are Christians, and have learned to read and to write.
somebody; did not think it expedient to send a colony there, and made a declaration to that effect. But the English, who were settled in the island wished to have some protection, and they complained that many runaway convicts from New South Wales had entered the country, where they exercised a pernicious influence over the natives, who were excited by them to many acts of violence against their neighbours and the settlers. This induced the English government to send there a consul or agent to decide disputes between the English according to the law of their country, and to remove vagabonds. This was done in 1833. Previous to this event a French vessel, under the command of M. Hadyn, of the Navy, arrived in the Bay of Islands. It was soon rumoured among the natives, probably at the suggestion of the settlers, that the French had come to seize the island, and that they intended to have satisfaction for the death of Marion and his crew. The natives, alarmed at the news, addressed the British government, and requested it to take the island under its protection. But the government, being well acquainted with the views of the French, did not think this necessary.

In 1836 a French adventurer, Baron de Thierry, announcing himself as sovereign chief of New Zealand and king of Niuhuluwa (one of the Marquesas Islands), published a formal declaration, in which he was styled a king of the British dominions, and to establish an independent sovereignty. He went in 1837 to Hokiana with a few settlers, but being soon abandoned by his companions, he left the country. The declaration of the baron gave great uneasiness to the British government, and they addressed the Baron de Thierry, in a letter of March 14, 1838, praying for the establishment of a regular government in the form of a British colony, observing at the same time, very justly, that the chiefs of the native tribes had too little authority to enact laws for the proper government of the island. At this period the British government had no control over the settlers. The English government was still undecided. But in 1838 an Englishman arrived in London, who had been residing for some time in Easteinomaumee, and had bought an immense tract of land in the province of Easteinomaumee; he wished to dispose of this. This gave rise to the New Zealand Company, which sent there the first regular colony in 1839. The number of emigrants who have gone, up to this time (1843), is between 5000 and 6000. They have settled on both shores of Cook's Strait: the principal settlements are Wellington, in Port Nicholson; Petre on the Wanganui river; and New Plymouth in Taranaki on the shores of the northern declivity of Mount Taranaki. These three settlements are in Easteinomaumee. On the southern shores of the island, in Auckland, settlement has been made on the shores of Tasman's Bay, where the town of Nelson has been built. In 1840 the English government, seeing that it now became necessary to establish an administration for the island, made a regular settlement on the shores of Port Waikato, in the Bay of Shoaraki, where the town of Auckland was built.

The settlements of the New Zealand Company have not given satisfaction, either to the public or to the settlers, and it must be confessed that the persons who have had the direction of its affairs have committed some errors which might have been avoided, and have caused discontent among the settlers and retarded the progress of the colony. Their first and principal settlement, Wellington, has been made in the north on the part of the island set apart for agricultural purposes. With the exception of the comparatively small alluvial tract in the valley of the Eritonga river, the whole country, to the distance of more than eighty miles from Wellington, is occupied by high mountainous lands, which are too poor for settlement. Some ravines contain patches which may be cultivated, but they are too small to support a single family of European agriculturists. The mountains, as well as the level tracts, are covered with thick forests of large trees, and a very close underwood, which renders the clearing of the land so expensive, that a single acre can hardly be brought to a cultivable state for less than from 30l. to 60l. Most of the emigrants possessed capital and hoped to be able to buy a considerable tract of good land, but they find that their intended amount of settled capital is inadequate. In forming the latter settlements, Nelson, New Plymouth or Taranaki, and Petre, the agents have partly avoided this error, having selected districts which contain extensive level tracts. Part of these districts are either not owned or only covered with fern and bushes, so that they are cleared at the expense of from 40l. to 60l. on the acre, these tracts have an inferior soil, which requires great labour to be brought into such a condition as to render the expense. Those parts which are covered with fern have a better soil, but are difficult to clear. The New Zealand Company made another mistake. They did not think that they had bought the land by having put the chiefs of the tribes the sums which had been stipulated. But these chiefs could not sell what did not belong to them. Every freeman of the tribes, who had the land, and most of them were possessed of large tracts, therefore the majority are inclined to sell their lands for a smaller sum. The Company, considering their claims not established, did not from the first adopt the best means to obtain these lands, the natives being informed that their lands had been disposed of by the Company to emigrants who arrived and were impatient to be in possession of what they had bought, continually urged their demands, and placed the agents of the Company under constant suspicion. The chief was still in a disputed state at the beginning of the present year 1841, and especially the new settlements on the Waangamie and in Tasman's Bay. That under such circumstances the settlements cannot be brought to a thriving state is evident. The British government, in concluding the treaty with New Zealand, has entirely put a stop to emigration. Since 1841 very few settlers have gone to the territories acquired by the Company, and many have returned to England. So it happened that some few isolated settlements near New Zealand, especially Port Nelson, a petition to Wellington in the year 1838. In establishing the colony at Auckland, the government at first adopted the principle of the Company being on the rights of the chiefs of the tribes; their sovereignty over all territories possessed by the tribes. But it was afterwards observed that this was not a thing which did not require it. The chiefs have no kind of sovereignty over the coast, and if a sovereignty exists, it is in the tribes, as the most favourable view of the subject, it may be said that the chiefs are possessed of the lands which the individuals who compose the tribe. The British government has lately declared that it assumes the sovereignty of New Zealand, which henceforth is to be considered a part of the British empire, but it does not intend to meddle with the disposition or division of the individual in the possession of his right to dispose of his property as he pleases. The English company having settled among the tribes are under the immediate protection of the English government, which is not tions. The British government has lately declared that it assumes the sovereignty of New Zealand, which henceforth is to be considered a part of the British empire, but it does not intend to meddle with the disposition or division of the individual in the possession of his right to dispose of his property as he pleases. The English company having settled among the tribes are under the immediate protection of the English government, which is not
As already stated, is surrounded by mountains, except at the aluvial tract through which the river Hutt or Eiritonga reaches the sea. These mountains rise abruptly from the water's edge, except in the most south-western part. The valley of the Waikato River, a broad and deep glen, is a strip of about 12 miles long, and two miles wide, the soil of which is composed of sand, shingle, and vegetable earth. On this flat ground, which surrounds that portion of Port Nicholson called Lambton Harbour, the town of Wellington has been built on a base of 1,200 acres in the form of a semicircle round the harbour. The flat ground not being considered sufficient for the town, the hills south of it were included. As these hills are generally too steep to build on, only the more convenient parts were selected for that purpose, and the most important points of the town are nearly four miles from the habour. The harbour is safe, and has good holding-ground. The town and adjacent country contain a population of about 20,000 individuals, but it can hardly be expected to increase much, as the communication with the coasts which have been settled can only be effected over

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and steep hills or by sea; and the latter mode is as dangerous and laborious as the first is difficult, on account of the continual gales which prevail in Cook's Strait, and the heavy swell of the sea which these gales produce.

Tauri Poonamboo.—This island, which is also called South New Zealand, is separated from Esthecumwane by Cook’s Strait. It extends from 40° 25' to 40° 40', and, if Stuart’s Island is included, to 47° 20' S. lat., and lies between 100° and 174° 30' E. long. It contains, according to a rough estimate, about 50,000 square miles, and is as nearly as large as England, exclusive of Wales. The north-eastern portion of this large island is not known. Seen from the sea, a chain of apparently unbroken mountains is observed at some distance from the shore, and hence it has been supposed that the island is traversed by a mountain-range which rises above the limits of perpetual snow, and that it falls off towards the coast on both sides, so as to leave a little land suited for agricultural purposes. Diefenbach however, on the information of some Europeans and natives, thinks that the mountains form coast-ridges which enclose a sound or the town of Nelson, which appears to be in a more thriving state than the other settlements of the Company.

The central mass of mountains is called Pelorus Ridge, and occupies the whole country between Tasman’s Bay and Cape Campbell. Port Underwood, the site of the Cape Campbell, is three projecting peninsulas, which enclose two very long inlets, Admiralty Bay and Queen Charlotte’s Sound, in which several safe anchorages are found, well protected against all winds, as the surrounding mountains rise to an elevation of 3000 to 3500 feet, and the islands and mountains are either entirely bare or covered with wood. In some places they are overgrown with fern. As the mountains generally rise from the water’s edge with a steep ascent, only a few places of small extent occur near the shore, on the slopes or in the ravines, which are fit for cultivation. On the east side of this mass is an indentation, which constitutes the harbour of Underwood. This port is a deep inlet formed by hills, from which numerous braided streams run towards the sea and form inlets and small coves, in which vessels find good shelter. Port Underwood opens to the south-west into Cook’s Strait, and is frequently resorted to by whaling vessels.

South of Port Underwood the mountains run inland, and at some distance the high ground is continued by the steep slope of Cloudy Bay to the vicinity of Cape Campbell. This elevated cape is the termination of the eastern range of mountains, which is called Kai Koura, and is covered with snow nearly all the year round. The surface of the country between the cape and Cape Campbell is comparatively level, and drained by several small rivers, among which the largest is the Wairau, which has a bar at its entrance. The amount of level land seems to be largest in the eastern end of this river, and the surface of the whole district is covered with the woods and numbers of high trees.

That part of Tauri Poonamboo which borders on Cook’s Strait was, even thirty years ago, the only portion of the island which was inhabited by natives. Several small tribes are settled on the larger inlets and the open sea, where they cultivate the small level tracts near the shore, and smaller patches situated in the ravines. The whole native population of this district does not exceed 150. The whole western coast is uninhabited. For more than twenty years it was visited by many sealers, but the natives generally met with any inhabitants. The circumstances of the coast being so abundant proves clearly that the coast was uninhabited; and as no settlement has been made there, it is probable that in the last twenty years the seals have increased.

We have no account of the west coast, except what we learn from Cook. He says that on this coast, from Cape Farewell to 41° 30' S. lat., there is a narrow ridge of hills that rises directly from the sea and is covered with woods. There are close bounds of pines on them, but this ridge is so abrupt, that it has a ridge of stupendous height, and consisting of rocks is totally barren and naked, except where they are covered with snow, which is to be seen in large patches over many parts of them, and has probably lain there ever since the creation of the world. A much more rugged, barren and desolate than this country extends from a distance of sea cannot possibly be conceived; for as far inland as the eye can reach, nothing appears but the summits of hills which stand so near together, that instead of valleys there are only recesses, and the country has a somewhat better aspect. It rises into hills immediately from the sea; but these hills are well wooded, and the chain of high mountains seems to be at a greater distance from the shores, and their slopes are covered with a great extent of country. For 42° 8' to 43° 20' the mountains lie still farther inland, as the coast-sea consists of woody hills and valleys of very height and extent, and has the appearance of being the southern extremity of the South Island. Many of the valleys form fine canals of water, and the country is so well wooded, that with precipitous rocks. All the indentations of this coast, which are numerous, are open to the western wind on the swell of the sea, except Milford Haven (40° 30' S. lat.) which is said to be very fine; but we have no access of it.

The south-western extremity of Tauri Poonamboo is bounded by elevated chalky cliffs, which are intersected by numerous narrow arms of the sea. These inlets offer safe anchorage to shipping from every wind. The principal of these is called Dusky Bay, Price’s Harbour, and Chalky Bay.

The most southern part of Tauri Poonamboo is the widest part, and in some maps and charts an extensive bar is laid down extending about 20 miles inland; it is said to be due west of the coast of New South Wales, and runs above a hundred miles inland, and is covered with the finest forests. But the accuracy of this account has been doubted on good grounds. It is however certain that no high mountains are observed from it, and that a great part of it is composed more rugged. The country on its banks contains few plantations. Their number does not exceed 1200.

North of Port Otako high land and a bold coast extends to Banks Peninsula. The country has not been visited, but according to the natives there is one large lake inland at some distance from the shore, near which talks abounds, which was formerly used by all the tribes in the manufacture of some of their weapons. This lake is called Tauri Poonamboo, or the Water of the Green Tail, and from it
the whole island has derived its name. No high mountains appear from the sea in these parts.

Bank Peninsula was considered by Cook as an island, but some years since it was discovered that it is joined to the main by a low neck of land. It has an oval form, and is nearly 70 miles in circumference. The surface is very regular, flat and hilly, and some of the hills are visible to sea from a distance of 40 miles. The higher parts are barren, but the lower slopes of the hills are well wooded and the soil is favourable to vegetation. It possesses two harbours. The larger, more spacious, called Akaroa, is near the eastern extremity of the peninsula. It is not farther from the sea than navigable vessels, is easy of access, and well sheltered. On the northern shores of the peninsula is the harbour of Toko-abo, which is not much inferior to that of Akaroa. Pegasus bay, a small estuary, into which two rivers fall, which are navigable, contains some miles from the mouth less round than the harbour rises gently from the sea. There are a few natives.

Opposite the southern extremity of Tavai Poenammoo lies an island. The Rev. J. F. L. Haizlip, in 'The New Zealand Journal,' says the island was discovered in 1810 by Stewart, a captain of a sealing vessel, and called Foveaux Strait. This strait is about 40 miles long and 12 wide on an average. It is very dangerous on account of numerous rocks which are dangerous, and one is very often invisible. The strait is one mile wide. Stewart's Island has nearly the form of an equilateral triangle, and measures in its greatest length and width about 40 miles. The coast is generally rocky and high. Along the western coast it has only anchorage under the lee of some small islands, but on the northern shores there are some small bays which afford good anchorage. The north-eastern shore has one of the finest harbours on the globe, called Pegasus or Southern Port. At its entrance are two islands, which divide into two channels, and each of them is deep enough to admit large vessels. The island is rather mountainous than hilly, and is almost covered with forests, which contain abundance of ship-lumber. Between the hills there are many fine valleys and some large canals, described as being very good and fit for cultivation. The harbours were once the resort of many sealing vessels, and at that period there was a small European settlement, where potatoes and other vegetables were cultivated with success; but since this branch of industry has been abandoned, the settlers have left the island and returned to Sydney. Some small vessels have been built in Port Pegasus.

This is from 'Three Voyages; Nicholas's Voyage to New Zealand,' 'New Zealand,' 'Ellis's Polynesian Researches,' 'Polack's New Zealand; Being a Narrative of Travels and Adventures,' &c. 'Twelve Months in Wellington,' by Hay; 'New Zealand,' by London Geographical Journal, vol. ii.; and John Arrowsmith's Map of the Colony of New Zealand, 1843.'
and are set off by judiciously chosen groups of trees and well-diversified foregrounds. He was however very unsuccessful in disposing of his pictures, and he tried his fortune in etching, but in this branch, though equally clever, he was equally unfortunate. He at last tried his utmost to ply the plate, but when the took it to a publisher for sale, the man offered him merely the value of the copper for it. This so incensed Zegers, that, having told the printseller that the day would come when each print from it would be worth more than he had offered for the plate, he took it into consequence, though he destroyed it. His prophecy came true, for even in Houbraken’s time a print from that plate sold for sixteen ducats. Zegers, broken-hearted at his bad fortune, took to drinking, and, in returning home one night intoxicated, he fell down a flight of stairs and killed himself. The tail Eichinoς, who quotes S. van Hoogstraaten in his account of Zegers, states that he cannot give either the year of his birth or death; in Piglinton’s ‘Dictionary’ however (ed. 1830) the dates 1629 and 1675 respectively are given. Zegers invented a method of printing landscapes in colours upon calico, but his invention was not taken up by any one.

(Houbraken, Groote Schouburg, &c.)

ZEZEGE. [SODAN.]

THE HOLLANDI SHELF. The antient Malacius Sinus (ευκρομάθης ή Μαλακας), is an arm of the sea comprised between the shores of Thessaly and Phocis. It is nine miles long and from three to four broad, points Anderas and Echinos being considered the entrance. Both shores are very agreeable and the head of the gulf is clear, being free from swamps and marshy islands as to be quite inoffensive; the land appears to be fast gaining on the sea. On the northern shore of the gulf are the villages of Ayla Marina, Siliida, the monastery of Ayio Giovanni, and Echinos, which is the first bay on the west, and may have from 500 to 600 inhabitants; the latter, which is little inferior, has considerable Hellenic remains; a large portion of the northern wall is still perfect. A square high Venetian tower stands near the village, and appears to have been from the beginning of the town post. It still remains.”

The southern shore, although without inhabitants, has its recommendation in the magnificent scenery of Mount Eta, and the historical associations connected with the name of Thermopylae, and the river Sperchius, now called the Houbraken, which form the boundary of the new kingdom of Greece.

The whole face of the country hereabouts must have undergone a considerable change since the days of Leonidas. Thermopylae, from which the word derives, no longer exists as a pass, and were it not for the hot springs, it could not be identified with the antient place. (Herod., vii. 198, &c.) Between them and the Sperchius is a mile of flat arable land, and between that river and the southern shores of the gulf there are about two miles, the land of the same open country, though the sea it becomes very marshy. The Sperchius now discharges itself into the gulf by one opening about three miles from its head, and is very shallow at the mouth, which is much obstructed by mud-banks, with only ten to twelve inches of water over them, but within the bar are twelve to fifteen feet of water; the stream within its banks runs about a mile an hour. Due north of the hot springs is the only place where the river is fordable. About three miles higher up (to the westward) there is a good stone bridge, but further on the road is a Turkish guard, and at the southern gulf a confluence.

The springs of Thermopylae, though the rock at the foot of Mount Eta, and are received into a large stone basin which is present the outlet of the basin. When the basin is flowing this basin, they disperse themselves over a considerable distance, running down below, and dissipating and absorbed previous to reaching; the Sperchius, which space is rendered very conspicuous by the aridity and whiteness occurring when the water conveys to be hotter, chalybeate, and to contain a great quantity of sulphur; the odor which they emit is highly offensive. They form small fibrous crystals about the rushbed and a few thick pieces of wood lying in their track, which indicates lime in suspension. The chain of Eta is of limestone rock, and at the southern gulf a confluence.

A little east of the springs is a remarkable hilllock, and near to its base the indications of the deposited soil are plainly discernible, having all the appearance of a sandbank. This is in all probability the spot where the remnant of the Spartan band made their last stand against the Persians under Xerxes. To the westward of the spot a most magnificent ravine with cliffs overhanging on each side to the height of 800 feet, and through it trickles a small stream, which, in winter, appears by the expansion of the watercourse to be a furious torrent, and seems to be the Argo of the Greek story. Crossing this, the road begins to be steep and difficult, till it arrives at a great antient ruins (probably Heraclae) on one of the lower ridges of the mountain, about 1200 feet above the sea, is the first Greek post. The road across the mountains from Xerxes to the Greek sea is not yet followed from it, and the Greeks on Mount Eta, which is obliged to descend into the plain in winter on account of the cold. The path is hewn of such a nature that no horses but those of the cursus, which are accustomed to such roads, could traverse it. They are the only species of the Persian breed of the island, and pass besides feeds bread and bread, with a few vegetables and occasionally sheep may be had.

The deepest water in the gulf is fifteen fathoms: bottom regular, sand. The sea is a great deal calmer here than farther south; in winter a regular gale, but to depend on the strength of land and sea breezes. But Herodotus says (viii. 98) that it takes place daily (viii. 98). (Orob. 10th.)

ZEITZ is the chief town of a circle, in the government of Meissen, and the Prussian province of Saxony. It is situated in a pleasant and fertile country, on the right bank of the White Elster, over which there is a stone bridge of seventeen arches, and which terminates on the further bank, where most of the streets are rather steep. It is surrounded by a wall in which there are six gates, and is divided into upper and the lower town. Having been formerly three of several public offices, it has several public buildings, among them the town hall, the university, the Mint, formerly the residence of the princes of Saxo-Teut. churches, and a Lyceum, which has a good library 12,000 volumes, and many MSS. The public inches, and several public offices. The number of inhabitants 7700, who manufacture calicoes, woolen cloth, leather and starch. There are also many calico-printing and beer claiming, distilleries, and potteries; and the manufacture of white cloth continually flourishing. Many of the inhabitants derive considerable profit from agriculture and the cultivation of their vineyards. Near the town, on the banks of the Elster, there is a park.

The antient bishopric of Zeitz was formed in 990 by Otho I., to promote the conversion of the Wendish Christianity. In 1329 the bishop and his clergy moved to Naumburg as a more agreeable residence, and the bishopric was then called Naumburg-Zeitz. On the death of the late Pflug, the late Roman Catholic bishop, in 1564, the administration of the bishopric was given to the electoral house of Saxony. Previous to this, the electorate of Saxony maintained its supremacy and right of patronage, over the bishopric, in its territorial rights and privileges, for John George, the last elector of Saxony, in his testament bequeathed by his will (in 1562) the bishopric of Naumburg-Zeitz and several other districts to his youngest son, Christian Moritz (Maurice). He was the founder of the Palatine Dyke of Saxony, and was dead in the death of his son in 1718. By an agreement made in 1720, the temporal government was assigned to the elector of Saxony, and the ecclesiastical affairs to the bishop of Saxony privy council. This constitution remained till 1827, when the exception of a tract of 20 square miles, was allotted to Prussia.

The bishopric of Zeitz was in 1827 placed in the new Archdiocese of Magdeburg.


ZELAYA [MEXICAN STATES].

ZELLE, ZELL, or CELLE, is a town in the province of Lippe in the kingdom of Hanover, situated 52° 57' N. lat. and 10° 4' E. long., on the confines of the Pihuse with the navigable Uer, which joins both which...
At the opening of the next decade, the German government acquired the property of the Münchhausen family, which included the estate of Zelle. There, Zelter became involved in the administration of the royal estate, a position that allowed him to exercise his flair for landscape and garden design. He worked closely with the new owner, Christian Friedrich, Duke of Brunswick-Lüneburg, to transform the estate into a garden modelled on the French style. Zelter's designs included a series of gardens, each with its own theme and purpose, and a vast park that combined formal and informal elements. His work at Zelle was widely admired and influenced the development of landscape architecture in Germany.

However, Zelter's involvement in the government also led to conflicts with other officials, particularly with the head of the police, who held a grudge against Zelter for having previously worked for the government in a different capacity. This rivalry and the stress of his government duties took a toll on Zelter's health, and in 1798 he was forced to resign from his position. Following his departure from Zelle, Zelter returned to his previous residence in Weimar, where he devoted himself to his passion for music and gardening. He continued to create gardens for various estates in the region, including the famous garden at the Castle of Colditz. Zelter's contributions to landscape architecture in Germany were significant, and his work continues to influence garden design to this day.

Zelter's career was marked by a strong commitment to public service, both in the realm of music and in the arts. His work at the Royal Court in the 1770s was instrumental in the development of musical life in Weimar and in promoting the cultural and artistic life of the city. His contributions to landscape architecture were also significant, and his work continues to influence garden design in Germany. Zelter's legacy is a testament to his dedication to his craft and to his commitment to creating beautiful spaces for the enjoyment of others.
ZEND-AVESTA, or the “living word,” is the name of the sacred books of the Parsees, which are usually ascribed to Zoroaster. (Zend, a proper name, in Zend-avesta, means "Persian," and was given to the original language to contain the original precepts and laws framed in Zoroaster, and consisted of twenty sections, called Avanes (or “noks,” according to Anquetil), of which we possess the sacred or Zend-Avesta, of which the whole or Zend-Avesta, of which the Zend-Avesta is, and which is by the Parsees called the Vendidad. However, even this work cannot safely be ascribed to Zoroaster; it may contain some fragments of his doctrines, but it cannot possibly belong to a period anterior to the Avesta. (Wilson, [p. 500]) that the sacred writings of Zoroaster were extensively lost during the period which elapsed between the conquests of Persia by Alexander and the elevation to the throne of Artaxerxes, or Ardeshir, the first king of the Sassanian dynasty; for when this prince removed them could only collect fragments of them from the ruins of priests; and it is very probable to this collection we owe the origin of the Zend-Avesta in its present form. It is very diffuse, full of repetitions, and trivial additions, but its merit is great, and it is well worth the reader's attention, as it contains a summary of the Zend-Avesta in its present form.

The original is written in the language called Zend. But Du Perron's translation was made from the Parthian-Avesta, a translation of the Middle-Parthian, and not from the Zend-Avesta, which is the original. Hence, the Zend-Avesta is the oldest of the patrician families of the main libraries of Venice. Its first distinguished member, Nicolo Zeno, lived about the year 1350. The possession of the Zend-Avesta was reserved to the patrician families; and in Italy, family archives to the researches of Cardinal Zeno, Zena was born, the first of the Zend-Avesta, for the most part, when the Zend was spoken.

Nicolò Zeno and Antonio Zeno were sons of Pietro Zenone, a member of the Venetian fleet against the Genoese in the war of Chioggia. Their mother's name was Agnese Dandola. The dates of the births of both brothers are known only from conjecture. Their parents married in 1326.

The name of Nicolo appears frequently in the annals of Venice from 1333 to 1388. In 1335 he took a prominent part in the election of the doge Marco Contarini; in 1336 he was one of the deputies sent to Florence by Venice on the war of the Pisans. In 1337 he was made a captain-general in the war of Perugia, on account of his young age and abilities. A letter of 1379; he is mentioned as having been considered one of the richest patricians in 1381; in 1382 he was one of the six electors who nominated the doge Michele Morosini, and in the course of the same year he was sent as ambassador to Ferrara, towards the close of 1388, he was sent, along with two other nobles, to receive the election of Zeno from the lord of Padua. After this his name disappears from public history; his subsequent career is unknown, having been published by one of his descendants in 1558.

According to this work, Nicolo Zeno, having enlisted on board a vessel of his own to visit England and Flanders was driven out of his course by a storm, and becalmed on the island of Frisland. Here he and his companions were rescued from wreckers by a prince of the name of Zichimi, into whose service Zeno entered in the capacity of pilot, and remained with him one or two years. At the close of that period, having been advanced by Zichimi...
wealth and honours for services in war, he invited his brother Antonio to join him, which he did. Nicolò survived his brother's arrival four years, and died in Frisland. It is impossible to ascertain with certainty either the year in which he quitted Venice, or the mouth of the year from his departure to his being joined by Antonio. The year 1390, the date assigned to his shipwreck by his descendant, is evidently an error, for in November, 1388, he was still in Italy. Most probably he sailed in 1389; two years being the period of the connexion between Antonio and him; and he survived that event four years. This brings us down to 1393 as the year of his death. It is certain that he was dead in 1398, for the family register, making mention of his son Tomaso in that year, describes him as mortuus. 

Of Antonio Zeno's history previous to his setting out to join his brother in Frisland, nothing appears to be known, except that he was married in 1384. According to the conjectures above stated, he must have arrived in Frisland about the year 1391. He remained there fourteen years in the service of Zichmni, having succeeded at his brother's death to his property and employments. At the end of that time (say 1405) he returned to Venice, where it is probable he had been in the same year; for the passage when the family annals which contain the story of the Dracone in 1406, speaks of him as 'quodam Ser. Antonio.'

The controversy alluded to in the outset of this article relates to the countries visited by the Zeni, and whether there was or was not a country called Antiqua in Amundsen's Time. To form an opinion on these questions, it is necessary to keep in view the nature and amount of the information we have respecting those voyages; and with this view we shall set aside all that has been said by commentators, until we have examined the facts themselves. In all the narratives which we know is compressed in twenty-seven pages of a very small and not very closely printed quarto volume, printed at Venice, by Francesco Marcolini, in 1558. The narrative purports to have been compiled about that time by a certain Marcolini. It describes the countries he visited or heard of, and their customs, a Life of his brother Nicolò, and a Life of Zichmni. But this book and a number of letters from Antonio Zeno to his brother Carlo, both written after the death of Nicolò. In one of these letters the writer declares himself to be the author of the narrative; in another he speaks of having seen the island; and in a third, he avers that the island 'was seen by a boy.' — 'These letters (the letters quoted in the book) were written by Messer Antonio to Messer Carlo, his brother; and it grieves me that the book and many other writings on the same subject have perished wretchedly, I scarce know if any exist now.' Antiqua was, however, visited by a quite a boy, I tore and dispersed them as boys will do ('come fanno i fanciulli, le squarcini e mandai tutta 'male'); as I cannot now remember without much sorrow.' Our knowledge of the voyages of the Zeni therefore rests upon a very small and scattered store of materials, from an old and faded map ('marina e vecchia') in the family archives; but he does not assert that it was made by either of the brothers, or even that it was made about their time. From this review it must be apparent how little we know of the Zeni, and how much that little has in all probability been disfigured.

Down to the death of Nicolò the elder, his descendant tells the story in his own person; this part of the book relates to the Viking expeditions, in which the Zeni were quartered under the command of King John. The remainder of the narrative is part of a letter from Antonio to Carlo, in which he rehearsed the story of a fisherman who had been shipwrecked on some far western land, and detained there many years, and added that, as used in Zichmni's 'To visit that country, in which he had accompanied him.' The last two pages are occupied with a fragment of another letter from Antonio to Carlo, in which he mentions the book or books he has composed, and adds that he will work no more, as he hopes soon to communicate with him by word of mouth.

P. C. No. 1775.

The part of the narrative which relates to Nicolò contains the history of three campaigns. In the first, Frisland is subdued by Zichmni, who commands the land forces, while Nicolò Zeno co-operates with the fleet. Zichmni is the lord of the island of Frisland, and at half a day's sail from Frisland, which he had previously captured, he took the king of Norway; and of the duchy ('duchen') of Sorano on the mainland ('fra terra') on the side next Scotland. Frisland was an island rather larger than Ireland. From this island a fleet of the Zeni's vessels, under the command of Zichmni, conducted the fleet of Zichmni to the west, and, after conquering several small islands, turned into a gulf called 'Soderu,' and captured in a port called 'Sanestol,' some ships loaded with salt-fish. Here he was joined by Zichmni, who had learnt over-land that the Zeni had reached the opposite headland of the gulf: the sea, the mark, was full of shallows. He next returns to a part of Frisland named Bondendon, where he learns that Zichmni has conquered the whole island. He sails thence to Frisland, 'the capital of the bot,' is situated in a gulf on the south-east, of which there are many in the island, in which fish are taken in such abundance that many ships are laden with them, and Flanders, Bretagne, England, Scotland, Norway, and Denmark send there for supplies. There are even some points that coincide with it. Sailing westward from the part of Frisland which he was thrown upon, Zeno turns into the gulf of Zoderu (the Zuyder Zee) and the east coast is the Zuyder Zee, which is the gulf to the south-east (the Dollar). The Zuyder Zee is full of shallows (pier di seccagge). The bays of Frisland were at that time frequented by vessels from all the countries enumerated, seeking for cargoes of fish. There are small islands ('isole') in abundance between the Texel and the mouth of the Ems.

The second campaign was undertaken by Zichmni against E本着ld, which is between Frisland and Norway ('sopra la costa tra Frisland e Norvegia'). The expedition does not reach the latter by a direct march upon Frisland, a large but uninhabited island. No mention is made of the relative position of Frisland to any of the other countries mentioned, nor of its distance from them. From Frisland an expedition is made against the islands and Island ('le isole') and Island ('l isorda') with the help of a duchy 'Frisland,' of which he is lord, and which he left to winter there. Zichmni returns to Frisland. Our indications are here still fainter. Proceeding on the supposition that the Frisland of the Zeni may have been the country then called Bres, E本着ld (the land to the east), between Frisland and Norway, may have been the Danish peninsula. 'Islanda' and 'islanda' appear to be merely the singular and plural of the Teutonic word island: the one cannot, and the other does not necessarily apply, to Iceland. Bres approximates to Bresay, the name of one of the Shetland islands.

The third campaign of Nicolò Zeno was a voyage of discovery he undertook from Bresay. He set out in the month of July, and sailed to the north (or north-west) till he reached Engroneland, and from there, he followed the whole description of Engroneland applies to Iceland, and is applicable to no other country. There are, the volcano; the hot springs; the brief summer; the early introduction of Christianity; and the great controversy with Norway. — 'Vengono molti navigi dal capo di sorpa Norvegia e dal Troadan' (Dronteime?). The greater part of the priests we are told are 'delle Isolande'—from the islands; another corroboration of the opinion that the Zeni' Islands,' in this narrative, is not the proper name for any one country. These indications are extremely vague: but there is nothing in them incompatible with the notion that Frisland is Frisland; Engroneland, Iceland; and the intermediate Bresay, the Bresay of the Zeni. Our report of the story of the shipwrecked fisherman, and his account of Zichmni's

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expedition in search of the lands described by the fisher-
man.

The fisherman's story need not be minutely examined
here. Antonio's version of it is sufficiently near the truth
to show that it is really an imperfect account of one of
the many accidental or premeditated visits paid by the North-
man fleet on the coast of the northern region of Ameri-
cas, but it is too succinct and disfigured to add
anything to our knowledge of these expeditions: its only
importance is derived from its having been the motive to
Zichmi's voyage of discovery to the west.

During that voyage Antonio, as was usual, was on a
landfall and has spent many days among the islands and shallows which were the scene of Nicolb
Zeno's first campaign, pushed out into the deep sea' in
the beginning of July. Scarcely was the voyage fairly
begun, when a tempest broke loose and tossed the vessels
about for eight days, swirling some of them, and leaving
the surviving crews entirely ignorant of their whereabouts.
On the return of good weather Zichmi steered to the
west, and reached an island which Zeno calls Lenti, adding, that
the inhabitants said the name.

The account of the voyage of Nicolb Zeno, the first,
who had sailed from Engroneland in the south-east
of Iceland, has, it is true, been subjected to doubt.
It is impossible to say with certainty when or
where it may have been compiled by the Venetians in
the course of preparing the secret of the coast.
It appears that it was made at sea and
published in Venice in 1549, by which time the
voyage of the first king, a son of Dedalus, king of Scotland. Every at-
tempt to make good a landing on the territory of this
Scotch colony having proved unavailing, Zichmi con-
tinued his voyage to the west for six days, at the termina-
tion of which he was compelled to turn back, as
another tempest forced him to seek for shelter before the wind till he was driven to a land
unknown to all on board. Here, as in the western voyage
of Nicolb Zeno, the presence of a volcano appears to
indicate Iceland, but the adventurer had no intercourse with
the inhabitants, and hence nothing is known of the
people of Iceland.

In the course of his voyage Zichmi visited two
places, which he calls the Engroneland, which points to
Iceland. If we assume Iceland to have been its
terminus, there is nothing in the narrative in-
consistent with the supposition that Friesland was the
point of departure, and the bearing of the time occupied,
as far as they are given, rather favours this view.

Confounding ourselves to the narrative of Nicolb Zeno the
youngest, leaving out of view all that has been written by
controversialists on the subject, we have found nothing
inconsistent with the idea that the Friesland of the elder
Nicolb may have been the Friesland generally known by
that name, except that it is called an island. And con-
ceiving that the Zeni appear to have been acquainted only
with the western portion of its shores, we shall regard
in their having taken it for an island. We have
paid no attention to the map published along with
the narrative of the younger Nicolb, for two reasons:—In
the first place, it is impossible to look at it without feeling
confused with Zichmi's map, the projection of which has
not been made much later in the time of the Zeni.
We have discovered nothing in their having taken it for an island. We have
paid no attention to the map published along with
the narrative of the younger Nicolb, for two reasons:—In
the first place, it is impossible to look at it without feeling
confused with Zichmi's map, the projection of which has
not been made much later in the time of the Zeni.

If we assume Friesland to have been the country
between the Zuyder Zee and the Elbe, the Estland between
it and Norway, the lands described by Nicolb
Zeno as the eastern Danish peninsula, 'le islands,' the different island
groups north of Scotland, of which Bressay alone seems
recognizable; and the Engroneland of Nicolb, and the
calculated of Antonio Zenino, Zichmi.
Iceland. In corroboration of this view may be recalled
first, the time and bearings of Antonio Zeno's voyage
from the island to Friesland; second, the Scotch colony
in the first island reached by Zichmi; third, the resort of
venison from Friesland to the northern kingdom of
England for fish; fourth, the commercial intercourse between
Engroneland and Norway—especially it would appear with
Drontheim. The state of Friesland towards the close of
the fourteenth century affords an additional corroboration:
it was a rude country, intermediate between the Huns-
towns and the trading towns of the Netherlands, where the
'stand-recht' (privilege of wreckers) was in full force,
and where pirates founded shelter and purchasers of their
wares. Zeno's account of Zichmi conveys the idea of
the chief of a band of rovers who had wrecked a
small island near Friesland from the king of Norway, and
made piratical excursions in every direction. Zeno's
narrative would lead to the inference that his band were
an indifferent seamen, and previously unacquainted with
the countries they visited.

This view of the Zeni's wanderings is not wholly un-
justifiable: the materials do not admit of certainty.
If it is not tenable, where is Friesland to be found? Sev-
eral writers have felt so strongly the impossibility of
answering this question, that they have been obliged to
make the work of the Zeni west of Greenland. Walckenaer,
seeing the im-
possibility of this, has fixed the most westerly termi-
nation of the Zeni's voyages on the south-east of Iceland to which he
have been led by the striking coincidence of the coast
which they described on the map of Nicolb Zeno the young
the south-east coast of Iceland.

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Carlo Zeno, grand-admiral of Venice, brother of Zeno and Antonio, was born about 1334. While yet a

child, the pope presented him to a prebendary of

Patras. At the university of Padua, some debts were

contracted, and Zeno, on the advice of his friends, in

the year 1378, joined the Venetian service, and was

appointed a soldier in different parts of Italy. Hence

home, he found the republic engaged in a war with the

Turks, and repaired to Patras for the double purpose

taking possession of his benefice and serving his

country. In the year 1380, he was appointed captain of

Tenedos to the Venetians. This occurred in 1378, and

the first event in the life of Zeno of which we have

able to ascertain the date so nearly. This acquisition

made Zeno of the Chioggia, in which the Genoese, the

Huns, and the Lord of Padua were leagued against Venice.

The defence of Treviso against the Hungarians was intrusted

to Carlo Zeno. He maintained that frontier post till

the Venetian government, after the loss of the last

of the sea, set sail from Venice, and broke through

eight galleys, and destroyed the

the Genoese fleet without losing a vessel. He took a

march of the enemy's ships in the Sicilian waters, and

summoned the fleet of the Chioggia to meet him

to the Venetians. In the battle of Chioggia, which had

occurred on the 1st of January, 1380., Zeno

stood on the

of

s

Zeno

appointed

grand-admiral, and in that capacity he

made
head against Spinola in the Archipelago, till the peace of 1811.

The next five years were spent by Zeno in Lombardy in the service of the Visconti. After this he was employed on embassies to France and England, and advanced in succession to the dignified magistracies of Ambassador to the Holy See, and of the Court of St. George. In 1403, while still holding the latter appointment, he was, contrary to the customary policy of Venice, placed in command of a fleet to oppose Bouicault, over whom he obtained a victory on the 7th of October. A few months later he went to Constantinople, and in the spring he left the latter city and proceeded to Persia. In 1406, while still holding the latter appointment, he was, contrary to the customary policy of Venice, placed in command of a fleet to oppose Bouicault, over whom he obtained a victory on the 7th of October. A few months later he went to Constantinople, and in the spring he left the latter city and proceeded to Persia.

Antonio Zeno, the younger, a respectable Greek scholar of the sixteenth century, also belonged to the family of the Zeno. He published at Venice, in 1559, a commentary on the speeches attributed to Pericles in Thucydides, and prefixed an important and beautiful commentary on Concinus Pericia et Lepidi, ex Thesmeide et Sallustio.

Zeno was born at Venice, Dec. 11, 1688: he was descended from a branch of the Zeno family which had been settled ever since the thirteenth century in the island of Candia, from where the Zenoi were obliged to emigrate and return to Venice owing to the Turkish invasion, by which they lost almost all their property. Zeno's mother was a distinguished Greek family of Candia. Zeno lost his father when a child, and was brought up in the most pious and religious manner. He was educated in the service of his brother-in-law, the bishop of Capo d'Istria, who placed young Zeno in the college of the Somaschi at Venice. He displayed early a decided taste for poetry, and after having left college he began to write melodramas, and published about 1400. In 1459 he was promoted to the see of Padua, where he died of apoplexy in 1481. Zeno was esteemed one of the first orators of his age. He left a valuable library and several valuable manuscripts, which were seized by the state of Venice and afterwards sold. His work 'Temistocle' was praised the Emperor Leopold I. of Germany, that he proposed to Zeno the situation of dramatic composer at Vienna with a salary of 4000 florins, which Zeno declined. He received orders for melodramas from the imperial courts of Augsburg and Nuremberg, and was rewarded for them. Since the time of Rinuccini, who may be said to have created the Italian melodrama, that species of dramatic composition had partaken of the vicious taste of the secential, or seventeenth century. Zeno's work was the reformer and renovator of the genuine melodrama as a poetical composition, in which he followed by his successor Metastasio, and afterwards by Sogna, Barbieri, Romani, and others. But at present that the whole of Zeno's composition is fallen very low in Italy, the 'librettii', or words of an opera, being made entirely subservient to the music, so that most of them appear unmeaning when read.

The Zeno family in the midst of its poetical occupations did not neglect grave studies. Zeno had an intimate friendship with Francesco Quirini, who has been repeatedly published. The original Latin appeared for the first time in vol. xix. of Muratori's collection of Italian historians.

In 1717 Zeno was invited to Vienna by the Emperor Charles VI., with the offer of the situation of court poet, to which was afterwards added that of historiographer to his imperial majesty, accompanied with a stipend of 1500 florins. Zeno, however, obtained orders for the composition of a work of more important literary and biographical information. Having noticed many omissions and inaccuracies in the work 'De Historiae Latinis' of G. J. Voss, especially concerning the Italian historians who had written in Latin, Zeno undertook to supply the deficiency by his own/his own/later/his later/his later/later record. He had an intimate friendship with Francesco Quirini, who has been repeatedly published. The original Latin appeared for the first time in vol. xix. of Muratori's collection of Italian historians.

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oratories for the imperial church till 1729, when his advanced years and the state of his health made him de sires of returning to Italy to end his days in his native country. Having obtained the consent of the emperor, and proposed young Metastasio to succeed him in his office of court poet, he returned to Venice, where he occupied himself in collecting books and medals, and in preparing his works for the press. The death of the Emperor Charles VI, and the vexation with the Austrian Succession which followed, deprived Zeno of the liberal emolument which he had continued to enjoy even after he left Vienna; but the Empress Maria Theresa soon after granted him an annual pension of 1000 florins, with the continuation of the title of poet and historiographer to the imperial court. In 1747 Zeno sold his cabinet of medals for 20,000 florins to the abbots of the Regular Canons of St. Florian in Upper Austria. His rich library he bequeathed by will to the convent of the Dominicans in Venice, native from whence the greater part has been since transferred to the library of St. Mark. Zeno died in November, 1750, being then eighty-two years of age.

Besides the works already mentioned, Zeno wrote also:
2. "Vi di Paolo Paruta." 3. "Note alla Vita di Cardinal Benzo." These two biographical works, as well as a Life of Sabellico in Latin, also by Zeno, are inserted in the collection of the historians of Venice, for which Zeno wrote also a "Prefazione," or introductory discourse.
9. "Note e giante alla Vita del Guicciardini scritta dal Manzi," prefixed to the edition of Guicciardini's works, Venice, 1738. Zeno's dramas have been published in 10 vols. 8vo., Venice, 1744. A selection of his letters was published in 3 vols. 8vo., 1792; but a more ample selection has been made by Morelli, in 6 vols. 8vo., Venice, 1785. Zeno left many other works published or unpublished.

(Comuni, I Seoli della Letteratura Italiana; Tipaldo, Biografia degli Illustri Italiani; Lombardi, Storia della Letteratura Italiana nel Secolo XVIII.)

Pietro Caterino Zeno, elder brother of Apostolo, was born on the 28th of July, 1666. He took the monastic vows in his 22nd year, and was soon after appointed to teach rhetoric in his order's seminary at Murano. From hence he was promoted to the chair of philosophy at Venice. When Apostolo quitted Venice, in 1718, he confided the task of editing the 'Giornale de Letterati' to his brother, who continued to discharge it till 1728, when he was obliged to resign on account of ill health. He died on the 17th of May, 1729, worn out by the excessive labours with which he performed his devotional exercises. Besides his contributions to the 'Giornale de Letterati,' Pietro Caterino Zeno published a translation of Arnauld's Logic, and translations of some of Bourdaloue's Sermons. He likewise published anonymously remarks on the poetry of Della Cava, and contributed the biographies of Baptisto Nani and Michele Forseari to his brother's 'Lives of Venetian Historians.'


This was followed by another in the same general line, and finally by yet another on the subject of the globes, which in the opinion of Cuvier does not differ from the "Scribante." [Vivendini, pp. 408, 409.]

ZENITH and NADIR, two Arabic terms, imported into Europe with astronomy, to signify the point of the heavens immediately above or below the spectator, and the point below him. The latter term, though still in use in the navigation of the globes, is quite obsolete among astronomers; the former is very frequently employed.

The zenith is the point at which a vertical line cuts the heavens: if the earth were a sphere, this vertical line, so that in which a plum-line hangs, would pass through the centre of the sphere. But the earth being a sphere, the vertical line, which is everywhere perpendicular to the tangent plane, does not pass through the centre of the sphere, but a little nearer to the spectator's side of the equator.

ZENITH SECTOR. This instrument is, as its name implies, a portion of a divided circle, which is employed in measuring the zenith distances of stars. First, it is celebrated operation for determining the figure of the earth, first applied a short arc to a long telescope, the-stating at the same time great accuracy with patient and skillful execution. The instrument which he used for measuring the celestial motions between Malvoinse, Burdian, and Amico, was made and described in his tract entitled 'Mesc a la Fru.' The following is a copy of his plate and description: The instrument is of iron, strengthened with edge-bar, covered with copper in the places required. The limb contains only about the twentieth part of the circumference of a circle of ten feet radius, and divided by transversal lines (Vernier) to thirds of a minute. The bisector is ten feet long, and the wires are illuminated from the top or by an aperture on one side of the telescope. The plum-line is enclosed in a tin tube, to protect it from the wind, and the observations were always made in a close apartment through an aperture in the roof.

The figure shows all the instruments, and also the sectors for setting the axis vertical, which it is when turning the instrument round, the plum-line being in the same direction of the limb. In making the observation, suppose the axis to be vertical and the limb to be towards the reader, as in Fig. 1 (the limb should also be the plane of the meridian, and the telescope directed towards it). Now if the eye be fixed through the centre, parallel to the line of sight of the telescope, the angle between the line so drawn and the plum-line is the zenith distance of the star; for at this point where the arc cuts the line supposing it at the pole, the line supposed not to
yet defined, except by its parallelism to an optical and instantaneous, and as a consequence, no. Hee off however the division on which the plumb-line beats. Turn the instrument half round on its vertical axis, when the plumb-line remains on its former division, and the telescope points to the same zenith distance, but on the other side of the zenith. It is evident that the telescope will no longer be in the same position, because the sector must be turned on its horizontal axis through twice the zenith distance; and as the plumb-line always keeps parallel to its position, and passes through the centre, the division on which it now beats must be distant from the instrument a divided height, which, passed through, that is, by twice the star’s zenith distance, and the division which bisects the two readings is the zero point, or reading which corresponds to the zenith. It is not necessary that the star should be observed in both positions, the sector will do, and the construction of the sector continue to have the same position with regard to the line of sight. In this case, return on a following night will serve just as well for determining the division which corresponds to the zenith direct to the telescope.

If this reading is not that which was intended by the maker, the difference is called the error of collimation, and is applied as a correction, additive or subtractive, to all the observations, according as they are on one or the other side of the true arc.

Picard enters into no details with respect to his observations, but gives at each place a zenith distance, which is the mean of a considerable number. He only observed one star, and that to the north, viz. the Knee of Cassiopeia [30°], and in his followings, he remarks that this star would have been more difficult to observe, and that if the star had been between the two zeniths, the error of the instrument (the division corresponding to the zenith, or error of collimation), which might have been imperfectly done, which was a degree in Hooke, would have been, if the star had been between the two zeniths, because then the sum of the two observations must have been taken; whereas when a star is always observed on the same side the zenith, there is only the difference to be taken, which must be corrected, and that is the same as in the imperfect meridian.

In 1674 Hooke published 'An Attempt to prove the Motion of the Earth from Observations,' in which he describes the instrument he contrived for observing the distance of 9 Draconis from the zenith of Gresham College, and in which he also demonstrates the variations which might occur. This consisted of an object-glass of 35 feet focus length, fixed at the top of the house, and referred by two plumb-lines hanging from a bar in the object-cellar and pinned to the roof through the floors, to a system of wires below. Before each observation, Hooke set certain marks in his wire-cellar to the plumb-lines, then fixed the wire-cellar, removed the plumb-lines, and bisected the star: after the observation, he verified the position of the wire-cellar, and came to rest, lines which he admired in this simple and ingenious contrivance, but his manuscript for noting the small variations seemed clumsy and inelegant. "Inconvenient weather and great indisposition in his health" limited Hooke's observations to four in number, from which he erroneously concluded that there was an annual parallax of the earth's orbit, and therefore that Copernicus's theory was true. With very little alteration, such as a user correct for the plumb-lines to the eye, a dot was then fixed above in a counterpoise, and a screw micrometer for a moment. Hooke's instrument, or his idea of using a deep dry well for the telescope-tube which were adopted, we conceive that most accurate determinations might now be made.

Picard, however, first discovered a motion in the stars which they could not account for. Picard, Roemer, and Flamstead all found that the position of Polaris varied at different times of the year, and Flamstead fancied that the change was due to parallax. In or about the year 1675, Mr. Nathaniel Hooke, a gentleman at Kew, employed Graham to make him a parallactic telescope, so called from its object, viz. to discover the change of place in the stars occasioned by the earth's change of position in her orbit. This is described in Smith's 'Optics, I., p. 7,' and fulfills Mr. Molyneux's own words in Bradley's 'Miscellaneous Works and Observation,' p. 93. It consisted of a telescope 25 feet long, with a short cross axis at the upper end, just at the place of the object-glass. This axis was so adjusted on its support that the telescope would remain in the same position when hung on one end of the axis and passed over a dot in a plane fixed on the tube near the eye-end. The telescope was drawn forwards in the meridian by a string and weight passing over a fixed pulley, and pulleys back by an anta- chine with a divided mark, and in that manner the image in the object-glass was made to pass under the eyepiece, and the object-glass was moved by the screw, which made the observation, the plumb-line is first made to bisect the dot by the screw, and the division read off; then the star is bisected also by moving the screw, when the division is again read off. The revolutions and parts through which the screw was put together to make the observation, the plumb-line is first made to bisect the dot by the screw, and the division read off, if there is no change in the relation of the object-glass and wires to the axis and dot.

Observations were made at Kew for some time with this instrument by Molyneux, Lord Bolingbroke, and Bradley; and in 1727 Bradley had a zenith-sector constructed for Graham by which he made his celebrated discoveries of aberration and nutation. There is a short description of this instrument by Molyneux, in a letter of his to Bradley, in the 'Miscellaneous Works,' &c.; but Bradley himself gave no description in his Memoir on Aberration (Phil. Trans., vol. xxxv., 1677.), and in one of his letters, to which is a word of Bradley, in the 'Miscellaneous Works,' vol. iv., p. 1 satisfied himself by referring to the description of a sector on a similar construction. (Dégrés du Méridien entre Paris et Amiens, 1740.) This last-mentioned sector was made by Graham for the measurement of the meridian arc. A great part of the work was on this sector, and by the permission of the Lords of the Admiralty, this account is by the astronomer-royal, who directed the alterations required to fit the sector for the field. The principal parts of this instrument, as originally made by Graham, was a telescope with a short sector attached to the eye-end, and a short cross or transit-axis to the object end, which causes it to move in the meridian when properly adjusted. A plumb-line passes over a fine dot at the extremity of the upper axis, and beats on the divided sector below, that is, both the dot and sector are below, but still hangs perfectly free. To prevent any disturbance from the wind, the plumb-line is screened by a tube, and the bob hangs in water that it may weigh the plumb-line and move the telescope. The meridian correctly, as well as to get a proper fixing for the clamp and mierometer-screw, another arc is fixed to the wall, and the telescope carries a frame with rollers at its eye-end, and is thus kept in contact with the fixed arc before and behind. A clamping apparatus, which slides along the fixed arc, and can be attached to it by screws in any position, carries a fine screw with a micrometer head, which pushes the telescope by acting on a piece of hardened steel, while the telescope resists either by gravity or spring. There are numerous pins and contrivances for different adjustments, which will be easily understood from Mr. Airy's account. In making the observation, the telescope is first to be set, or nearly so, to the star, the bisection of the upper dot is verified, and then the observer, if below, is bisected. He is then moved by the screw forward, for instance, and the micrometer head is to be read off. When the star is in the centre of the field, it is bisected by carrying the screw still forward, and the micrometer is again read off. Finally, the sector is then bisected forward, and the star is bisected, and the micrometer read off. A simple proportion will give the quantity, which is to be added to the first reading, or subtracted from the second reading, in order to get the reading corresponding to the star.* Bradley’s sector is originally

* In some of the books referred to, it will be seen that the dot bisected by the sector is the same as that bisected by the sector. This is not the case, for in the reading taken, but a screw which carries weight never reads the same when moved forwards and back wards, and it is always necessary to carry the screw the same way in the same operation.
made was not reversible, and therefore only fit for measuring differences or variations. When, after its removal to Greenwich, actual zenith distances were required, the instrument was shifted across the room, from the east to the west side, where a second fixed arc, &c. were ready to receive it. We need not say that this was very objectionable, as such an operation would be made at any rate, in bisecting what might be the relation of the parts of the instrument, and so to lead to untrue conclusions. Even while it was at Wanstead, and considered to be impossible, a slight change seems to have taken place, which has been investigated by the "Reduction of the Observations taken by Bradley at Kew and Wanstead," Oxford, 1832. In remounting it, the astronomer-royal has given the property of reversion very satisfactory, and M. Maclare's observations with it are of extraordinary accuracy.

A sector was used in the measurement of the meridian in France, by Cassini de Thury and La Caille, which greatly resembled the sector of Piacart, except that the arc was of much greater extent, being 22° and framed with three radii. The telescope was fixed at the back of the instrument, so as to be at once more firmly fastened and out of the way of the plumb-line; and, lastly, its micrometer-screw was applied to the wires of the telescope (sometimes called the interior micrometer), instead of moving the whole instrument. By this mode of observing, the instrument is set approximately to the star, and the nearest dot accurately bisected. When the star is in the centre of the field, it is bisected by the micrometer-screw which carries a wire in the focus of the object-glass, and thus the excess or deficiency of the nearest dot is determined. This instrument in the application of the micrometer-screw is due to the Chevalier Louiville, and in this respect we prefer the French to the English construction. See "La Méridienne de l'Observatoire Royal de Paris vérifiée," par M. Cassini de Thury, Paris, 1740. The sector is figured on page 31, and described on page xlvii.

Boëguer and La Condamine, in their measure of the arc of Peru, were compelled to fabricate their own zenith sectors, and adopted a very elegant mode of graduation, the measure being given by La Condamine to their colleague Godin. The telescope and arc being prepared, a star is selected which has pretty nearly the same zenith distance at both extremities of the arc of the meridian. Now calculate approximately the value of the chord of the double zenith distance of the star, and find what fractional part it is of the radius. Suppose it is nearly \( \frac{1}{2} \) of the radius, then take a beam compass, mark two dots on the arc, and step seventeen times with the same opening along the radius, and so fix the dot over which the plumb-line is to pass. The instrument is no longer moved, and the operation follows:—After being adjusted to the meridian, the plumb-line is made to pass over the upper dot and one of the lower dots, after which the star is bisected by the interior or Louisville micrometer. On a following day the instrument is removed, the plumb-line and the upper dot, and the lower dot, the star is again bisected by the micrometer. It is plain that the double zenith distance of the star, corrected for refraction, aberration, etc., is measured by the arc subtended by the star, dot by the two dots below &c. the sum or difference of the micrometer readings. But the arc is, by construction, that the sine of which is \( \frac{1}{2} \), which is found from the tables; and the value of the micrometer readings being also known, the zenith distance of the star is found. The operation may be repeated at the other end of the arc with the same star, and using a different submultiple of the radius. See "Mesure des trois premiers degrés du méridien," par M. de La Condamine, Paris, 1751, pp. 185 et seq.; "Figure de la Terre," from the Memoirs of the French Academy, 1751.

We insert here the method employed by Maupertuis, La Caille, and others to ascertain the value of the total arc of the sector. A line of considerable length was carefully measured from a well-defined spot and a signal erected; the same signal was used in the same place, and the line had a length as very nearly subtended at the spot the arc to be verified, and here a second signal was placed. The sector was then laid horizontally on a bed prepared for it, the centre being exactly over the defined spot, and the telescope is set to the first arc set out. This is done satisfactorily, a fine line was stretched over the centre and the first dot of the divided arc. Now shifting the sector round, the second signal was bisected, and it was seen what division was bisected by the line which continued to pass over the centre. The true angle is evidently marked on the ground, and is calculated from the fixed length of the perpendicular and the distance. The value of the arc read on the sector is compared with this, and the error of the total arc detected, which is at once corrected, and the value of the arc so determined. At present the value of the total arc of a sector would be determined by a comparison with the mural circle.

In 1775 Bird erected a zenith sector at the Observatory of Oxford, which in all respects respects similar to Cassini, but it is fixed to an upright pillar which revolves so that the instrument is reversible. From some cause or other, though observations have been made with this instrument, they have not been considered satisfactory. It appears, however, that after a considerable time, an instrument of considerable accuracy, and capable of doing good work, though perhaps inferior to the French sectors, viz., ascertaining the index error of the mean declination instrument, has been supplied to modern use by observations by reflexion.

The zenith sector of Ramsden, which was used in the trigonometrical survey of Great Britain, and in the British arc, is described and figured in detail in the "Phil. Trans." for 1803, and in the second volume of the "Account of the Ormance Trigonometrical Survey of Great Britain." The instrument has consumed a considerable part of the Tower in 1781. This instrument is very fully detailed in the section referred to, it is useless to enter into particulars here. Ramsden viewed the upper dot by a long memory, which was placed in the eye, and the distance of the nearest dot determined. This instrument has the chance of deranging the bisecting by mounting to the north. The Astronomical Observations with Ramsden's Zenith Sector," reduced by Lieutenant Yolland, R.E., have recently been published (1842) by order of the First Ordinary, 1740.

After the destruction of Ramsden's sector, Colonel Go, applied to the Astronomer Royal, for his advice as to the best form of instrument for determining latitude and the field. The construction given by Mr. Airy and Ramsden, and approved by the Astronomer Royal, has been adopted; and the great merit of the instrument has been such that it has been adopted by all astronomers, and is in use in almost every observatory in the world. The division of the arc is marked off in one piece and strongly framed, carries back three levels, one tube against which the beam is bent off at the moment the star is bisected, determines the position of the axis with respect to the zenith. The telescope-frame with the eye and object end is cast into a solidly braced piece, and is fixed at its middle, while the two sides move freely for a few degrees on each side the plane. The divided arcs are graduated on the vertical arc in its top and bottom, and there are four micrometer microscopes, one at each side of the object, the tubes being bored in the solid telescope-frame. There is a wire-micrometer in the focus of the telescope. A stop to the axis enables the observer to use the instrument exactly half round by touch, and also instaneously. The observations are made in the following manner:—the instrument being pretty near in the meritian and axis vertical, the telescope is set nearly for the star, and the microscopes are read off. Before the star reaches the centre of the field, the observer bisects it with the upper dot, reads both ends of each level, and the whole instrument is turned half round and the star is again observed, the bisecting being now performed by the tangent-screw of the telescope-frame, the time is again noted, and the sector takes off the arc above and below are read off by the micrometer microscopes. In this way the double zenith distance of a star, free from all error of collimation or of the vertical axis, can be obtained in a few minutes. This instrument has been in use from the time it was invented and found very satisfactory.

The telescope is one of 34 feet focal length, and the instrument bears the same relation to a mural circle that the ordinary sector does to a quadrant.

When Troughton first proposed the mural circle as the best form of instrument, great doubt was thrown on the practicability of observing by reflexion with sufficient nicety, and in that case a mural circle does not reverse, a supplementary instrument was added. In Europe the instrument was first employed at the French Academy, for laid plan position, and the object was exactly half round, and the whole instrument was turned through a complete circle. The observer then bisected the star with the upper dot, and the mural circle was read off. The virtual axis of a star is given by the position of the triangle completely described; and the formula of the instrument is given by the position of the star in the triangle. The formula of the instrument may be given by the position of the star in the triangle. The formula of the instrument may be shown in the following manner:—the instrument being near the meridian and the axis vertical, the instrument is laid on the bed and the circle is read. The star is then bisected with a beam compass, and the circle is again read. The difference of the circle read will give the zenith distance of the star, which is the formula of the instrument. This formula is given by the position of the star in the triangle, and the position of the circle on the instrument. The formula of the instrument is given by the position of the star in the triangle.
was wanted to show the position of the zenith or horizon. 

Partly on this account, but chiefly to set the constance of aberration and precession with the greatest precision, Broughton planned what he called a tube, consisting of a telescope of 25 feet focal length, without any sector, and in which the variations of zenith distance of γ Draconis and those zenithal stars were to be measured by a micrometer-screw.

The instrument has not been described, indeed it is not yet constructed; or, if the description is published, several improvements have been made in its construction by Mr. Airy since its appointment as astronomer royal. The telescope rests on its lower end, continued beyond the axis, on a piece which has adjustments for verticality, and the object of the instrument is to allow the telescope to be rotated about a Y-bearing. The wires at the focus are moved by a micrometer-screw, and the star and wires are seen through diagonal four-glass eye-piece. The plumb-line hangs within the tube, and is viewed above and below by micrometer microscopes. Instead of adjusting the plumb-line before each observation, it is bisected by the micrometers after the observation, and a correction applied which is reduced from the upper and lower readings. Mr. Airy, labouring with this sector to show that it will work, in reversing the instrument, has given a double suspension of the plumb-line and made the instrument reversible on a star in the same night, by using a stop as in the ordnance sector. The observations with the zenith tube are printed in the Astronomer Royal's annual report. This is the observation made in the test of the instrument.

The zenith sector has not been much used upon the continent since the great surveys made in the middle of last century for ascertaining the figure of the earth. In the French arc from Dunkirk to Formentera, the latitudes were taken in the direction from the south of the shore. There are reasons to suspect that error has been committed. More recently, the transit in the prime vertical as employed in Germany and Russia for ascertaining differences of latitude, and as it would seem with great equal advantage and nearly in the meridian, the observations have been constructed by the imperial observatory of Petropavlovsk, of which a most favourable account has been given by Professor Struve. While admitting the excellence of this kind of instrument for telescopes of moderate size and not seeing one can easily, far less suspects the zenith sector when made reversible and of the proper magnitude.

Some years ago Mr. Babbage proposed a construction for making a double suspension of the plumb-line. This may perhaps be applied in the following manner:—Conceive a parallel ruler to be placed upright, one of the bars being made into a vertical axis with the necessary adjustments, and the other carrying a telescope. In such a position it is clear that the telescope would continue parallel to itself whether the ruler be open or shut. But if one of the bands is a little longer than the other, then a very large angular motion of the bar will give a small angular motion to the telescope, which can be easily made with tolerable accuracy, the latter angle can be computed with great exactness.

Exquisite workmanship would no doubt be required to make such an instrument answer, but we think that for this and other differential purposes Mr. Babbage's suggestion deserves more attention than it has yet met with, especially where telescopes of limited size are used.

The adjustments of a zenith sector or zenith tube will differ according to the construction of the instrument. Whichever be decided upon near the zenith must be got from observations with another instrument, and the star made to pass the meridian-wire at the calculated time by the proper adjustment screws.

When this is done and the telescope secured, a star must be made to pass along the declination-wire (this should be carried by a micrometer-screw) by twisting the wire-cell, when the adjustment for a fixed zenith telescope is complete. If the telescope rest on a cross axis and carries a sector, the cross axis must be made horizontal, the transits of stars towards the extremities of the arc must be observed, and the azimuthal deviation ascertained [Transitj and corrected by which an error is known, and an error being known, the cross axis at top and fixed arc below must be turned so as to make star pass at the right time.

When the instrument is reversible, the axis is first to be set truly upright. Suppose the instrument in its meridian position nearly, and face east, read off the division bisected by the plumb-line, or the two ends of each level. Now turn half round, read off again, and bring, by the adjusting screws, the plumb-line or the levels halfway to the first readings, and finally adjust each level by its own screw to read each end alike. If this be carefully done, when the instrument is restored to its first position, the plumb-line or levels will remain undisturbed by the last reversal. Now turn the axis of collimation, and correct whatever changes is thereby caused, by the east and west screws of the axis. The axis is now vertical, or by a repetition of the process may be made so. The next adjustment is to make the line of sight describe a great circle in the plane of the instrument. This may be done as described above, from knowing the true time; or by observing one star or two stars near the zenith in reversed positions, when the disagreement between the observed and computed difference will give the quantity to be applied to an end. In a modern instrument this adjustment would be by antagonist screws carrying the wire-plate. If the instrument be a simple zenith tube, make a star run along the declination-wire, and the adjustment is finished. With a sector place the two meridian-wires at the same distance from the zenith star, which gives the time. Then by turning round the axis, make an extreme star pass at the proper time and clamp the axis. In the new ordnance sector the instrument rests on a tray which is adjusted as to level by thin plates; an end of the tray is fastened to the sides of the tray. Finally, twist the wire-cell till a star runs along the declination-wire. A comparison of the zenith distances of the same stars observed in reversed positions on the instrument, will give the error of collimation, and this may be corrected if the observer wishes, but it is better to leave it untouched, and to consider the sum of two observations, Face East and Face West, as a double zenith distance.

According to the value expression (\(\frac{\ell}{\ell^2}\)) used by Digonc M. Laxit, he was enjoying his greatest celebrity about b.c. 404. He visited Athens in company with Parnesides, and they were present at the Great Panathenæa.

Parnesides is described by Plato as at this time a man advanced in years, with his hair quite white, but of a handsome and pleasing person: he was then about 60 years of age. Zeno, who was then near 40, is spoken of as a tall and comely person. If we place this visit to Athens, in b.c. 404, we have the date that Zeno was born about b.c. 404. The authority for the visit to Athens is the 'Parnesides' of Plato, which so far as relates to this historical fact, is generally admitted to be sufficient authority.

It is of opinion that Zeno, as well as Parnesides, was employed in legislating for Elea. He probably lived till the commencement of the Peloponnesian War, or at least to b.c. 430. According to Plutarch (Periher) he was the dead are reported with much diversity. He is said to have conspired against a tyrant of Elea, who was variously named, and, on the discovery of the conspiracy, to have been put to death in a cruel manner.

Many works were attributed to Zeno, which says Diogenes, were full of wisdom. One of his great works he is said to have read at Athens, on which occasion Socrates
was present. Though the 'Parmenides' of Plato, which is the authority for this reading at Athens, cannot be taken to be literally true in all respects—for Sostratus, then a young man, is represented as discussing with Zeno—yet there seems no reason to doubt the fact of Zeno having read his work at Athens. The object of this work, which was divided into several parts, was to show that it is impossible to conceive things as being Many, and this conclusion was derived as a necessary consequence from the supposition of things being Many; for Zeno showed that if we suppose things to be Many, then the same things are both like and unlike. Now, it is impossible to conceive the same things to be both like and unlike, and therefore it is impossible to conceive things to be Many (ὅπερον εἶ ἐσθαναί ἐν τῷ ἀνάμνησι ἐσθαίναι καὶ τῷ ἀναμνησθεῖν, ἀνάμνησις ἢ καὶ πολλά ἐστιν). Plato, Parmenides.

Zeno said he had been the first who used the form of the dialogue in the Parmenides. Parmenides, therefore, must have added the doctrines of Parmenides, for he is said to have added little of his own to what his master did. His method was, to assume the truth of received opinions, and then to show the contradictions to which they led; and, accordingly, Aristotle (as quoted by Diogenes Laertius) calls him the inventor of Dialectic; not of Logic, as some modern writers have it.

Zeno's work in defense of the Doctrine of the One was, as he himself describes, designed to support the opinion of Parmenides against those who ridiculed it on the ground that if there is only One, many absurd and inconsistent consequences must flow from the doctrine; and, accordingly, his work is in opposition to those who say that the Many is Possible, and his aim was for its special purpose, to show, that many more absurd consequences will flow from their hypothesis of things being Many, than from the hypothesis of the One, if a man rightly follows them up.

This is the key to the explanation of what we know of the arguments of Zeno.

Zeno asked Protagoras if a single grain of millet, or the ten-thousandth part of a grain, would make a noise in falling. Protagoras said it would not. He then asked if a medimnus of such grains would make a noise in falling; and the answer was, Yes. Zeno further asked if every moment in space Köπος, and therefore is at rest, for nothing goes on in the space in which it is; but that which does move is at rest, for everything either moves or is at rest. Aristotle replies, that this argument is false: it supposes that time is composed of indivisible moments and he adds, that time is not composed of indivisible moments nor is anything else composed of such parts. It is not possible to pass from a single space unit to another in a single moment of time. The argument is supposed, by those who say motion, to pass from one point in space to another in every position between these two points it is said, where it is; and when a thing is where it is, it must be where it is, according to Bayle, who seems not to approve of Aristotle's solution offers one which is no better. Zeno's difficulty remains. There is no absolute motion: we only conceive motion relatively.

There is a fourth argument, which is well stated by Bayle.

If we view the arguments of Zeno as mere sophisms, we view them wrongly. They touch the fundamental conceptions of all science, and Aristotle means that they cannot be ignored. His arguments are directed to show the difficulties inherent in all our conceptions of motion. When, as Aristotle says, he denied the notion and said that the space of a stadium being passed over by a tortoise, the appearance of a stadium being passed over by a tortoise, that we could conceive how it was possible, he denied that we could conceive how it was possible. There is no authority for saying that he denied the existence of the One, even if he denied the existence of indivisibles. He did not admit that the things of the One could be known, for he said they were too small to be able to hold them, what things are (τὰ μικρὰ). His speculations pass us by the difficulty of determining the notion of indivisibles, and to the consequent conclusion of all things
One, without parts, an absolute, immovable, inconceivable Existence. Nothing particular is said of his theological doctrines, and the few physical doctrines that are attributed to him are not worth mentioning.

(Diodgenes Laertius, *Zeno of Elea*; *Ritter, Geschichte der Philosophie*, vol. 1; and the *Fragmenta* of Zeno, by Ritter and Peller, in their *Historia Philosoph. Græco-Roman.*; Bayle, *Dict*, art. 'Zeno,' which has very copious and curious notes, or their own work, *Zeno,* by Victor Cousin, and the references there; Kant, *Kritik, sç., Die Antinomie der Reinen Vernunft.*)

ZENO of Citium, a small town in the island of Cyprus, was the founder of the sect of the Stoics. The time of his birth cannot be absolutely ascertained, or the other events of his life. He was however a contemporary of Antigonus Gonatas, king of Macedon, and died before him. Antigonus Gonatas died n.c. 240. Clinton places the birth of Zeno between n.c. 327 and 332, and his death either not completely developed or that it possessed too little originality to unite all his followers.

Chrysippus is said to have been the person who gave to the Stoical system its full development and fixed its doctrines; accordingly there was a saying if there had been no Chrysippus, there would have been no Stoics.

The Stoics made three divisions of philosophy, which Plutarch calls the Physical, Ethical, and Logical (*logipædia*), of which our word Logical is not a translation. But other Stoics made different divisions. The triple division was made by Zeno himself, as Diodorus states in his Life of Zeno, in which he has collected all the Stoical doctrines. The Logical part of the Stoical system comprehended their metaphysics. It is certain that between truth and falsehood there is nothing but true (*ἀλήθεια*); truth implied body (*φύσις*); but true was without body, and was merely in opinion. They attributed to things an absolute existence in themselves. Their system, so far as we can learn what it was, was obscure, and their metaphysical doctrines. They cultivated logic, rhetoric, and grammar. In their Physical doctrines they assumed first two principles, the Active and the Passive: the Passive was Matter (*ἔσωσα*), the first substance of the universe. The Active was God, who was one, though called by many names. The universal belief in a deity, or in many deities, they considered one of the evidences of God's existence.

All the universe, says Seneca, according to our Stoical doctrines, consists of two parts, the spiritual and the corporeal. The spirit is in motion in every part of all. The body and the soul sympathize, for each is another body. Death is the separation of the soul and the body. The Soul is a spirit (*σώματος*) that is born with us; consequently it is body, and it continues after death; still it is perishable: but the Soul of all things, which, as the animal parts, is impenetrable. As to the duration of the soul, there were different opinions: Cleanthes thought that all souls lasted to the general conflagration; Chrysippus thought the souls of the wise only lasted so long.

The Ethical doctrines of the Stoics have attracted most attention, as exhibited in the lives of distinguished Greeks and Romans. To live according to nature was the basis of their Ethical system; but by this it was not meant that a man should follow his own particular nature; he must try to submit himself to the nature of all things. This principle is the foundation of all morality; and it follows that morality is connected with philosophy. To know what is our relation to the whole of things, is to know what we ought to be and to do. This fundamental principle of their system of application is not always easy, nor did they all agree in their exposition of it. Some things were good, some bad, and some indifferent: the only good things were virtue, wisdom, justice, and temperance, and the like. The truly good was that knowledge and virtue which is sufficient in itself; he despises all that subjects to its power the rest of mankind; he feels pain, but he is not conquered by it. But the morality of the Stoics, at least in the later periods, though it rested on this apparently cold, and permitted a man to do nearly everything that he liked. Such a system, it has been well observed.
might do for the imaginary wise man of the Stoics; but it was not a system where general adoption was compatible with the existence of any actual society.

The subject of the Stoic sect is one of great extent. The Stoics, or the so-called Stoics, formed a sect that continued for four centuries, in which time the doctrines were subject to so much change that we often see little besides the name in which the professors of this sect agreed. Most of the Stoic works are lost. Two of the notable works, whose works remain, Epictetus and the emperor Marcus Aurelius, if not the most genuine specimens of the Stoic school, are certainly two of the most worthy.

(Diogenes Laertius, *Zeno; Ritter and Frelat, *Historie Philosophie Rationalistes; Diogenes Laertius, *Aurelius; Evagrius; and other articles in this work.)

ZENO (335 B.C.), emperor of the East, succeeded, in A.D. 474, the emperor Leo I. Thrax, or more correctly his own son Leo II., the younger, as will appear below. Zeno was the son of a Roman empress, Leo, but the Ioucides, a noble Isaurian, and his original name was either Arinclus or perhaps Tarasius or Tarasciscus, or more probably Trasalisus. We know nothing about his earlier life, of which however detailed accounts were probably given in the works of Eustathius of Syria, which are lost, and those of Candidus, of which only some fragments are extant. We must suppose that he was a man of great influence, especially among his warlike countrymen the Isaurians, who were known as the sect of Constantinople for in A.D. 468 the emperor Leo Thrax gave him his daughter Ariadne in marriage, evidently for the purpose of securing his influence among the Isaurians, whose assistance he wanted against the ambitious schemes of his prime minister Leo

On that occasion the son of Ruumblades adopted the Greek name of Zeno, and was created by the emperor Patriadius, and appointed commander of the imperial ill-guard and commander-in-chief of the Greek army in Asia Minor. In A.D. 469 Zeno was raised to the rank of Caesar, and he assisted the emperor in getting rid of Aspar, who was put to death in A.D. 471. Leo, being old and childless, wished to appoint Zeno his successor, but the people disliked Zeno on account of his ugliness, a reason which was not at all valid. For, although he was handsome, he was of importance among the Eastern nations, who have always liked and still like to be ruled by handsome kings. Leo consequently gave up his plan, and chose Leo, the son of Zeno and Ariadne, for his successor, in A.D. 473. The emperor Leo I., who died early in the same year, A.D. 471, was succeeded by his elder son Leo II., the younger, under the regency of his father, whom the title of Augustus was conferred on Leo Thrax; it may be that Zeno assumed that title at that time, but neither of these opinions has been established.

Zeno was created by the emperor Leo Thrax, and Leo the younger succeeded him under the regency of his father, upon whom the title of Augustus was conferred. The emperor Leo I. died early in the same year, A.D. 471, and the emperor Leo Thrax, who died in A.D. 473, was succeeded by his younger son, the emperor Leo I. The emperor Zeno was proclaimed emperor of the East, by a general of Basiliscus, who advanced upon Isauria, defeated Zeno, who retired to a castle called Constantinople. Basiliscus was made prisoner, and starved in the tower in Capadocia. Zeno was re-established by order to reward Harmacius, he made him commander-in-chief of his army. Zeno succeeded his son Basiliscus and the emperor Zeno was so aggrieved, that Zeno was compelled to get rid of him. Assisted by Illus, he succeeded in seizing Harmacius, who was put to death, and his son Basiliscus was banished, after having been deprived of his imperial dignity. Zeno continued to exert all the influence over the emperor, which he soon abused. He not only used illus to the emperor Ariadne, but against his life. Illus, being deposed from his next to the prime minister, fled to Asia and revolted against the new emperor. The emperor Zeno, who retained his power over several other rebellions broke out. Theodosius, a adherent of Basiliscus, retired after the fall of the usurper Thrac, collected a considerable force, and ravaged the environs of Constantinople. He attacked a mine, but was repulsed. Illus attacked the emperor Zeno with peace from him, in A.D. 478; but Theodoric soon forced his way, united himself with Theodore the Great, and after conquered Italy, and the emperor would perhaps have given up his throne but for the death of the emperor, which took place in A.D. 481. Zeno, to Theodoric the Great, Zeno, killed off by his anger, by creating him consul, and finally stimulated or allowed him to conquer Italy. [THEODORIC THE GREAT].

After peace had been concluded with Theodoric the Great, the emperor Zeno, Finding a man had been murdered under Marcian, the son of Anemochus, emperor of the West, and the grandson of the emperor Marcian, who married Leontia, the sister of the emperor Zeno, Marcian, intended to depose Zeno, and he took Constantius, who was his son, and surprised him, and after a desperate flight fled for refuge to a church. He was taken out by force, his head was shaven, and he was banished to a monastery at Cesarina. But he escaped, caused much trouble, and was expelled to a castle of Cyprus. He was banished to Venice, and received a pension, and that of Illus, who, as already observed, had insulted the
empress Arianne, and escaping being put to death by flying to Asia, where he placed himself at the head of an army of 70,000 men. The patrician Leontius, who was sent by Zeno against Illus, betrayed the emperor and joined the rebel. Longinus, the brother of Zeno, took the field against the Lusiaci, but was defeated and prisoners. For some time afterwards he was found in the camp of the rebels acting in concert with Illus and Leontius. The rebels then laid siege to the castle of Paphras, where the empress-dowager Verina was confined on account of her letters to Persia. Verina also joined the rebels, and as they intended to put Leontius on the throne, she adorned him with the diadem, and he was received as emperor at Antioch, in A.D. 484. Zeno then despatched a fresh army against the rebels, which was commanded by John the Hespanok and John the Scythian, two generals who have often been confounded, but who were two different persons. They defeated the rebels in A.D. 486, who took refuge in the desert. Zeno then attacked the imperial palace guard (Silentarii), Anastasius I., an army officer that had married Arianne, the widow of Zeno. It is said that Zeno died under strange circumstances, but the accounts of his death are very contradictory. In this case, the account is that Zeno was beheaded in his bed while asleep; or he died in consequence of a debauch; or he was buried alive while insensible in a fit of apoplexy; and Arianne was the author of his death. It happened however that some ecclesiastical writers, for reasons of their own, declared that Zeno never committed violence, that he never killed a woman, and that he was an upright man, but he never fell into such frightful fits of passion as Leo; he sometimes did honourable things for honour's sake, but less frequently and less with dignity and generosity. In short, he was the shadow of Leo, without his energy. Zeno was the son of Stephano, who did not understand the art of government; he was as vain as a woman, and his constant endeavours to be admired as something great made him ridiculous in the eyes of the witty Greeks.

Zenobia or Zenoia, from the coins Zenoia, SEPTIMIA, was the daughter of Ammon, an Arab chief, who possessed the southern part of Mesopotamia. By her first husband Zenoia was mother of Valens, who died at Wabarath. Her second husband was Septimius Odenathus. Odenathus was of Palmyra, a flourishing city included within the limits of the Roman empire, and dignified with the title of Metropolitana Colonia. He was at the head of some tribes which belonged to that part of the Syrian desert which surrounds Palmyra. His Roman name Septimius indicates some connection with the empire, and it is ingeniously conjectured by St. Martin that the origin of this connection is the faithful emperor named Septimius who inherited the family of Odenathus must be traced to the time of the emperor Septimius Severus. The name of the father of Odenathus was Septimius Airanes Wabarath, and Odenathus had by his first wife a son named Septimius Orodos, or Hercules, as Trebellius Polio calls him. Septimius Severus married Julia Domna, a Syrian woman of Emessa, and this circumstance, combined with his long residence in Syria, renders it probable that a connection was formed between the emperor Severus and the family of Odenathus, who, as usual in such cases, would adopt the name of their Roman patron. In the year A.D. 244, after the assassination of the younger Gordian, Philip, called the Arabian, was proclaimed emperor, and on leaving Syria for Rome he intruded the government of Syria to his brother Priscus. The bad administration of Priscus caused a rebellion in Syria, and Septimius, a niece without the royal house which had reigned at or possessed Emessa, was proclaimed emperor. Jotapius was defeated by the imperial troops and lost his life, but Philip was assassinated before the news could reach him. Other usurpers arose in Syria, but Septimius successfully withstood all attempts. In the year 251 Septimius Airanes was prince of Palmyra, and his son Odenathus was general. On the death of Airanes, Odenathus succeeded to the principality of Palmyra. The year 254 was the death of Septimius Zeno, and it is not certain, but it was before A.D. 256. In A.D. 256 Marcus, to whom Trebellius Polio calls Cyriades, left Antioch with a large sum of money, and betook himself to Sapor, king of Persia. He persuaded Sapor and Odenathus to an invasion of Syria, in which attempt the latter was taken prisoner. He enjoyed his dignity for about a year, having been assassinated, according to Trebellius Polio, while Valerian was on his march to the Persian war. It was Sapor's design to anticipate Valerian by invading Syria, but he was defeated at Ctesiphon. He had the head of Odenathus, assassinated by his old ally Odenathus. But after the surrender of Valerian to Sapor, Odenathus sent costly presents to the Persian king, in order to conciliate him; the presents were rejected with contempt, and Odenathus was commanded to bring Valerian to Persia by order of the emperor. He died during his march, and while the Roman troops were retreating on all sides in the confusion which followed the capture of Valerian, he alone opposed the progress of the Persian armies. The Persians had entered both Syria and Cilicia, and Odenathus was at Antioch. He was a bold commander, and the Arabs of the desert, and some few Romans who joined him, attempted to cut off the retreat of Sapor, in which he was aided by Balista, the Roman general, who made a successful resistance in Cilicia. His wife Zenobia also accompanied him in this campaign, and he ordered her to retreat; but at the passage of the Euphrates he sustained a defeat and lost much of his baggage. He was followed by Odenathus through Mesopotamia, again defeated, and with the Ctesiphon, to the Tigris. If Odenathus had besieged Ctesiphon, it appears that it was not successful.

About this time Odenathus assumed the kingly title, and it is probable that he was considered emperor in the East. Gallienus, who bore a like name to his father's capture, A.D. 266, was too indolent to attempt to maintain his authority. The Roman army in Syria and Egypt proclaimed Macrianus emperor, who associated with himself in the empire his two sons Quietus and Macrianus. Quietus was in Syria, where he was opposed by Aureolus, who had also risen against Gallienus, and totally defeated. Upon this Aureolus was received by Galienius into partnership in the empire, and he followed him to the East to the partition of Macrianus. Odenathus, seeing what turn things had taken, entered Syria, upon which Balista, who had quarrelled with Quietus, murdered him and delivered up to Odenathus the town of Emessa, in which Quietus and Macrianus were then both. It is said that Odenathus claimed himself emperor, but he was defeated by Odenathus and lost his life. About this time probably (A.D. 283?) Odenathus was associated by Galienus in the empire, and received the title of Augustus. A quarrel was broken out between the partisans of Macrianus. Odenathus now undertook a second war against the Persians, to avenge the cause of Valerian; he made many prisoners, whom he sent to Gaius, and caused them to be hanged, as a punishment for being killed by the bravery of another. Odenathus again besieged Ctesiphon, but without any result. On leaving Ctesiphon he marched into Cappadocia to oppose the Scythians, who were ravaging that part of Asia Minor. Odenathus was assassinated at Emessa in Syria with his son Orodos, by a relation named Macrianus, A.D. 267, the conspirators were put to death by the soldiers of Odenathus, and his wife Zenobia succeeded to his power.

The events of the life of Odenathus are confusedly told, yet the main facts may probably be received as true. He
lous, king of Macedon, which was from a.c. 413 until n.c. 389; and Harduin and others are therefore probably incorrect in fixing upon Herculea in Lucania, in Italy, as the birth-place of Zeuxis; for that city was not founded until after the destruction of Siris, a.c. 433. (Diodorus Siculus, xiii. 59, 60.) From this complaint of Apelleus, who lived at Athens, Zeuxis must also have been early in that city; and he was most likely a native of one of the Hercleas in Greece, and, from his connection with Archelaus, probably Hercules Lyncestis in Macedonia. Herodes Atticus says Herculea in Lucania to be the birthplace of Zeuxis, from the circumstance of his being commissioned to paint a picture by the Crotontians—a very insufficient reason. Zeuxis, when he had made himself rich by his profession, and must accordingly have been somewhat advanced in years, gave away some of his works, and Archelaus was then living, for he presented a picture of the god Pan to that king. Zeuxis lived also some time at Ephesus, and Tzetzes, an indifferent authority, calls him a native of that city. Lucian tells us that the greatest painter of his time: he was immediately preceded by Apollodorus of Athens, whom he surpassed; and he was immediately followed by Parrhasius of Ephesus, who surpassed him. The peculiar excellence of Zeuxis was in the execution of things amiss and ancient times; as he drew well and in a grand style, and the beauty and grandeur of his forms were so predominant, that he was said by Aristotle to have failed in expressing mind. Aristotle adds that he was in this respect much surpassed by his younger contemporaries, Thamyris, who practised his art in the next century. Quintilian says that Zeuxis followed Homer, who loved powerful forms even in women; he likewise noticed his excellence in light and shade. Cicero also speaks of the fine forms of Zeuxis. That he was excellent in light and shade and colour is evident from the complaint of Apollodorus, that Zeuxis had robbed him of his art: effective colouring and light and shade were the peculiar excellences of Apollodorus. With these excellences Zeuxis combined a dramatic effect of composition, and the wonderful thing was being able to draw and to paint pictures as Tirion. Other famous works by him were—Jupiter in the midst of the assembly of the Gods; Penelope beseeching the absence of her husband; Menelaus mourning over the fate of Agamemnon; a Massys bound, in the temple of Concord at Rome in Pliny's time; an Athlete, under which he wrote the line—"It is easier to find fault than to state,"—which, according to Plutarch, Apollodorus wrote upon some of his pictures; and a Cupid crowned with roses, that Ephesus was proud of. This picture is noticed by Aristophanes in the comedy of the 'Acharnenses,' but the painter's name is not mentioned; it is however ascribed to the scholar who is his. As the comedy was acted as early as the third year of the Olympiad (426), it is evident from the scholar to ascribe the picture in question to Zeuxis, as he cannot have painted so soon; but from what has been said above it is pretty evident that Zeuxis was a man of mature years in n.c. 426, and, as we have seen, had amassed a fortune within 27 years of this date, for he presented a picture of Pan to Archelaus, who died in a.c. 388. Zeuxis had previously executed several works for Archelaus in his palace at Pella, for which the king, says Pliny, paid him 400 minas, 1250, according to Horn. If, therefore, it be granted, as to the later part of the Olympiad (355), the year in which Isocrates delivered his oration to 'Aphrodite' (on the exchange of property), in which he praises Zeuxis, for, according to the Greek custom, he would not have done it had it been true, then still another, no less an authority than Vitruvius (book x., p. 632) relates, from Verris, that he died through laughing excessively at the picture of an old woman which he had made, but this is perhaps a mere fiction: there is no other notice of such a disaster. Zeuxis is represented another, but to the name of its Romanizing, it is a very poor piece of his reputation and entitlement of his wealth; he used to wear a mantle with his name woven in letters of gold on the border. To balance this weakness there are two or three anecdotes of an opposite character, which show that he had no want of penetration. Plutarch relates a story,
that upon an occasion when in his company a painter of the
ame of Agastarchus boasted of the great facility and
rapidity with which he painted, Zeuxis quietly remarked,
that he took a long time to paint anything. And Pliny
records how he reproved a certain Megabyzus, a high
priced painter, upon his boasting to be a rival of his own,
and asked if he thought to be painted or a god. But now
the painter conversed so very ignorantly about pictures,
that some lads who were grinding colours were forced to
laugh, upon which Zeuxis observed to him—As long as you
were silent, these boys were admiring you, wondering at your
great skill; and the number of the days is the less!—but now
that you have ventured to discourse about the arts, of which
you have no knowledge, they are laughing at you.'
Plutarch relates this story of Apelles and Megabyzus, and
Pliny relates it of Apelles and Alexander. Zeuxis, proba-
ably, was the principal successor of the great Parmen-
sius; Zeuxis painted some grapes which are said to have
deceived birds, but Parrhasius painted a curtain which de-
ceived Zeuxis himself, who accordingly confessed himself
beaten; Zeuxis also painted a boy carrying some grapes,
which likewise deceived the birds; but in this instance, to
the dissatisfaction of the painter, who justly observed, that
if the boy had been as well painted as the grapes, the birds
would have feared to approach them. Though these
stories in themselves are valueless, the fact that such stories
should have been circulating in antient times is of
considerable interest, as it shows that the antients believed
that exact imitation could be accomplished in colours, a
result they could only have arrived at by the evidence of the
eyes, for it is impossible to know by the senses the true
surface of objects; that, such productions at more than their due value, which
is evident from the fact that there is scarcely a passage in
antient authors in which mere beauty of execution and exact
fidelity of imitation are praised, if we except one or two
instances in which the painter is considered as a poet, and
principally of all the antient writers speaking of the arts.
Cicero states that Zeuxis used only four colours, but this
is probably an error, or he may mean in his caricatures,
in which four are all that are necessary. The same writer
names a painting of a little dog exactly resembling a

ame, of Aglaophon, and of Apelles are in different styles,
yet they are all three perfect in their respective styles. Zeuxis painted also pictures in white or mere chiaroscuro,
that is, in light and shade, what the Greeks termed monoch-
romas; such subjects are very common now.
It is remarkable that Pausanias does not mention the
name of Zeuxis, and we may infer from this that Zeuxis
painted easel pictures only, or upon tablæa, wooden panels

(πίνακας), which, from their perishable nature and facility of
movement, were probably the most artistic of art works.
The more exact knowledge of these panels, the greater the risk
that his works will perish, as they are better worth removal. Few of the great
painters of Greece painted upon walls: Apelles never did,
and the only pictures we have been described of were those
delphian pictures on columns, which were inserted in the
walls; on this subject see Raoul Rochette, 'Sur l'emploi de la Peinture,' &c.

[Pliny, Hist. Nat., xxxv, 9, 36; Lucian, Zeuxis or An-
ticibus; Quintilian, xii, 10, 3; Cicero, De Jovent., ii, 1;
Bretius, 18; De Ora, iii, 7; Valerius Maximus, iii, 7, 3;
Aelian, ii, 2; iv, 12; xiv and 47; Tzetzes, Chil. viii,
196; Stobaeus, Serm. 61; Plutarch, Peric., 13; De Gler.
Athen., 2; Aristotle, Poet., 6.)

ZIEGLER, FRIEDRICH WILHELM, a popular actor
and dramatic writer of Germany, was born at Brunswick
in 1760. His fine person, and his great talents as an actor
made him the favourite of his time. It is said he was the
actor for the court theatre of Vienna, and the Emperor at
his own expense sent him to the best German theatres for
the purpose of studying and cultivating his art, and afterwards
appointed him to the court theatre of Vienna, where
Zeuxis, as a painter and poet, may be considered a
plain title for the place he held. He was never satisfied with his fame as an actor, but he endeavoured to
obtain the higher reputation of a dramatic author. His
attempts were crowned with great success, and he became
one of the most popular and prolific writers of the day. His
plays and dramas, all in prose, were performed at Vienna and in nearly all the
towns of Southern Germany, where they enjoyed such
popularity as those of Iffland and Kotzebue. Invention,
situation, and effect were generally very happily combined
in his plays, and he showed a great practical knowledge of theatrical affairs; owing to these circumstances, some of
his plays, such as 'Parteienwuth' and 'Die vier Tempera-
mente,' still continue to be acted, although the language is
rather obsolete. In 1798, when Kotzebue came to Vienna
his plays were so universally beloved, that Ziegler felt an
inward and right spirit, and a sense of being able to do
so much an opposition to him, that he quit Vienna after
two years. As Ziegler was engaged in the service of the
imperial court, he frequently allowed himself to be made
use of for political purposes, partly by writing plays with
a political and tending to abuse of the Spanish and Austrian
allegions. A collection of his dramatic works, in 3 vols.
8vo., appeared at Vienna, 1791-94. A more complete col-
lection of Ziegler's 'Sämtliche Dramatische Werke,' in 13
vols. 8vo., appeared at Vienna in 1821. He made also
several attempts at the translation of the heroic dramas,
but his success was small, as he possessed little philosophi-
cal knowledge, whereas his aesthetic works are very con-
 fused and almost worthless. His principal works in this
respect are,—1, 'Zergliederung von Hamlet's Charact
psychology and Ethicus,' Wien, 1803, 8vo.; 2, 'Die Dramatische Schauspielkunst
in ihrem ganzen Umfange,' Wien, 1821, 8vo.; 3, 'Der innere und ausserre Mensch in Beziehung auf die bildenden Künste,' Wien, 1823.
Die Mondschein,' in 2 vols. 8vo. In the year 1821 Ziegler left the stage, and
received a pension given to him for the remainder of his life, which he spent principally at Presburg. He died at Vienna,
on the 21st of September, 1827.

ZIMBACH, Christian—Lexikon, Bibliothek der
schönen Wissenschaften, unter Ziegler.'
ZIMAPAN. [MEXICAN STATES]
ZIMB, an insect translated hornet in Scripture (Exod.
chap. xxviii., ver. 25; Deut. vii. 20; Joshua xxiv. 12.)
It is remarkable that this name is, in Hebrew, and of
the same meaning as Zimm, the name of a city, Zunil, of
the Indians, in Peten, Guatemala, in which country the
buzzing noise, the account which Bruce has given of the
zimb, or dog-fly, of Abyssinia, offers such striking analogies
to the insect specifically termed tsirah, and included in the
more general term zebub of the Hebrew Scriptures, that
we cannot but lean to the identification of the two.
It is difficult to conceive that Isaiah could have had in
view any other insect when he says—'The Lord shall hiss for the
fly that is in the uttermost part of the rivers of Egypt.' (Isaiah vii. 18.) The original word rendered fly in the English
version of the Bible has the sound of vizebub, which is the
proper name of a particular fly in Geer, and was the same in Hebrew.
The following is the substance of the account which Bruce
gives of the Abyssinian zimb. This insect had not pre-
vious to his time, been described; it does not measure
very little larger than a bee, of a thicker proportion, and
has wings, which are broader than those of a bee, placed
separate, like those of a fly; they are of fine gauze, without
colour or spot upon them. The head is large; the upper
jaw or lip is sharp, and has at its end, in a strong
pointed hair, of about a quarter of an inch long; the lower
jaw has two of these pointed hairs, and the penel of hairs
when joined together makes a resistance to the finger
nearly equal to that of a hog's bristle. Its legs are serrated
on the inside, and the feathers covered with bristly hair
down . . . . He has no sting, though he seems to me
rather of the bee kind; but his motion is more rapid and
sudden than that of the bee, and resembles that of the
gnat fly in England. There is something peculiar in the sound
of the buzz of this insect, which induces me to believe it proceeds, at least in part,
from a vibration made with the three hairs at its snout.
'As soon as this plague appears, and their buzzing
is heard, all the cattle forsake their stall, and are
covered with fat and are worn out with fatigue, fright,
and hunger. No remedy remains but to leave the black
earth [where they breed] and hasten down to the sands of
Atbara, and there they remain while the rains last, this
cruel enemy never daring to pursue them: the tribe is immense as is his strength, and his body covered
with a thick skin defended with strong hair, yet even the
camel is not able to sustain the violent punctures the fly
makes with his pointed proboscis. He must lose no time
in removing to the sands of Atbara, and therefore at

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tacked by this fly, his body, head, and legs break out into large bosses, which swell, break, and putrefy, to the certain destruction of the creature. Even the elephant and rhinoceros, who, by reason of their enormous bulk and the vast quantity of food and water which they require daily, cannot shift to desert and dry places as the season may require, are obliged to roll themselves in mud and mire, which constantly coats them over with a kind of armour, and so to stand their ground against this winged assassin; yet I have seen some of these tubeceles upon almost every elephant and rhinoceros that I have seen, and attribute them to this cause. All the inhabitants of the sea-coast of Mr. Cuvier, of Cape Gad's, and the coast of the Red Sea, are obliged to put themselves in motion and remove to the next sand in the beginning of the rainy season, to prevent all their stock of cattle being destroyed. This is not a partial emigration; the inhabitants of all the islands of the Indian Ocean were thus called in reverse of the flood. These were the Shepherds, leading a wandering life and preserving their immense herds of cattle by conducting them into the sands beyond the limits of the black earth, and bringing them back again when the danger from this insect would be over. Nor has the history of the plagues which God brought upon Pharaoh by the hands of Moses, without stopping a moment to consider a singularity—a very principal one—which attended this plague of the fly. It was not till this time, and by means of this insect, that the Lord said he would destroy Pharaoh and the Egyptians. And it would seem that then a law was given to them that fixed the limits of their habitation. It is well known that the land of Goshen or Geshen, the possession of the Israelites, was a land of pasture, which was not filled or seven, because it was not overflowed by the Nile. But the land overflowed by the Nile was the black earth of the valley of Egypt, and it was here that God confined the flies; for he says, it shall be a sign of this separation of the people, that not one fly should be seen in the land of Egypt. In the foregoeing, that land which is now a kind of soil has ever since been the refuge of all cattle emigrating from the black earth to the lower part of Athbara.

If the fly that is in the uttermost parts of the rivers of Egypt, which is held forth in Isaiah as an agent for the punishment of iniquity, is (as we have shown there is every probability of its being) the insect now under consideration, it would appear that the zimb was not then, any more than at the present day, a native of Palestine, but that swarms of them were drawn from Egypt for the execution of a special purpose. From Bruce's graphic description of the habits and appearance of the zimb, we are irresistibly led to connect it with some of the Cestrize. Laterrell, Mr. Hope, and others, who have already mentioned the zimb being subject to the attacks of the Cestrize, and Mr. Hope, stated a few years ago, to the Entomological Society an account of a larva of one of these insects which attacks the rhinoceros. As this portion of Bruce's narrative (relating to the habits and the effects produced by these flies) is much ridiculed and long regarded as particularly unworthy of belief, we may add that, in addition to the facts stated by Laterrell and Mr. Hope, strong corroborative testimony may also be found in the works of more recent African travellers, although not bearing directly upon the actual zimb. — Notwithstanding our fatigue, no rest could we obtain. The buzz from the insects was like the singing of birds; the men and horses groaned with anguish, &c. &c.

If I do not think our animals could have borne such another night, the zimb would have continued all the time Bruce had written on the subject. He told us that hogs and cows were its principal victims, but that he had heard of armies being destroyed by this terrible scourge. (Clarke's 'Travels,' 2nd part, sec. ii., p. 65.)

The Cestrize were probably only different pronunciations of the same term he-tand, as this fly is called both by Moses and Joshua. Mr. Sir Clarke, in the 9th volume of the 'Linnean Transactions,' part ii., 1843, refers the fly alluded to by Moses (as he to his great damage) to Asilus Cestrise. A few remarks upon Bruce's figure, that it has no resemblance to the genus of flies the Culicerebra, but is rather, though with something fictitious about it, allied to the genus Schoenus, or perhaps Tubanise, both of which genera are certain killed in their attacks on cattle.

There can be no doubt that the zimbop is a perfectly distinct insect from any of the modern Cestrize. Aristotle describes it not merely as a blood-sucker, 'Vitaria TUBANUS,' but also as a parasite upon a strong proboscis (lib. iv., c. 7). He observes, likewise, that it is produced from an animal inhabiting the waters, in the vicinity of which it chiefly abounds in; i.e., in Egypt. (Hist. Anim., lib. vi., c. 38.) This near the Nile, or rather the Nile, and the coast of the Red Sea, where the flies are confided on this fly is, one of the largest: it has a stiff and long proboscis (measuring proboscis, and emits a certain humane and harsh sound. Virgil's account, as far as the source is concerned, is similar. Now the modern Cestrize is from being a blood-sucker, furnished with a strong proboscis, has scarcely any mouth; and it especially since the vicinity of water, to which cattle fly for refuge. Here it is more probably related to Bruce's zimb which represents a new genus, as Bruce's zimb is found in the neighbourhood of rivers, and belongs probably to Pagonik or to Nemat ostrica.' (See Kyby of Spence's 'Intr.'

ZIMMERMANN, JOHANN GEORG VON, was born on the 13th of December, 1728, at Brugs, a small town in the German part of the canton of Bern. He belonged to a distinguished family, especially on his mother's side, and as she was a native of the French part of the canton of Bern, Zimmermann acquired from his childhood a facility in French and good knowledge of English. His education was conducted in the house of his parents up to his fourteenth year, when he went to Bern to prepare himself for the university. In 1747 he went to Gottingen, to study medicine, and here he was received by Haler. Zimmermann, the kindest man that ever met an acquaintance with English literature, for which he had always a great partiality. Love of study was so great, that he scarcely ever took any relaxation; and he thus laid the foundation of science by which he suffered all through life. The death of his elder brother, GTammer, distressed him. 'I here lead the life of a man who is destined to die even after his death.' The first symptoms of melancholy appeared while he was yet at Gottingen. When he returned to Gottingen, he wrote his 'Dissertation Physiologicae de Irritabilitate' (Gottingen, 1751, 4vo.), by which he acquired considerable reputation as a theoretical writer on medicine, both on account of the independence of his judgment and the soundness of his arguments. This little work is still held in high esteem. It was translated into Italian by P. Gian Vincento Patrizi (Naples, 1756, 8vo.). After leaving Gottingen he spent a few months in Holland and at Paris, and then returned to Bern, where he commenced his career of a physician with great success. Shortly after, because of ill health he came from Gottingen to see his friends at Bern, and also for the recovery of his health, and his native place had such
ZIM 779 ZIM

charm for him, that he resolved not to return to Hanover. Zimmermann was commissioned to fetch Haller's family from Göttingen, and not long after he married a relation of his (Sztadt physicus), at Brugg became vacant, and Zimmermann, who had already acquired great reputation as a physician, was prevailed upon to accept it on account of his property and family connections he had at Brugg. His practice there was not of small importance: he was, for no physician surpassed him in the quick perception of the nature of disease and the remedies required to remove it; patients came from all parts of Switzerland and from the adjoining countries; and although he was short of public opinion, it was not so to several of the courts of Germany, where his advice was requested by the waters of Pyrmont. But in a short time he found that Pyrmont, instead of being a place of rest for him, was a much more busy place than Hanover, for persons flocked thither in numbers, for the treatment of the best physicians in Hanover.

In 1770 his wife died, and he himself was in a state of constant suffering from internal disease, which induced him the year after to go to Berlin for the purpose of submitting to a dangerous operation. He remained at Berlin for five months, and the advice and skill of the most distinguished men of that capital. He was also introduced to Freideric the Great, with whom he had a long conversation. On his return to Hanover he felt in good spirits, and as he had got rid of the cause of his suffering, he said he was going forward with his great professional exertions brought on a return of his old complaint, and in its train came his former depression of spirits, which was increased by the death of his daughter. He had now only a son left, and this son in ill-health, and Mercier, in a state of perfect insensibility. The friends of Zimmermann, who pitied his situation, prevailed upon him to marry again: the influence which his young wife exercised over him promised to be most beneficial; he returned to his practice, his cheerfulness increased, and he became popular in social circles. The fruit of this happy period was the working out and completion of his great work on Solitude ('Ueber die Einsamkeit'), which appeared at Leipzig in 1797. It is divided into five books, in which he meditates on the subject of the latter part of human life, the first book on the last days of old age, and the second and third on bordering on the last stage of life. This work, which is the most matured of all his productions, was soon translated into all the languages of Europe, and became as popular in foreign countries as in Germany. The English translation, under the title 'Solitude considered with respect to its influence on the mind and heart' (London, 1797, 8vo.), was made from the French translation of J. B. Mercier, which however is only an abridgment of the original; for Mercier had not the boldness to lay before the French public all the important disclosures which the work contains. This book obtained such a vogue that the author friends and admirers in all parts of Europe. The empress Catherine II. of Russia sent him a magnificent present, accompanied by a letter in which she thanked him for the salutary prescriptions he had given to her son, and offered him the post of her private physician. On his declining to go to Russia, the empress requested him to recommend a number of young physicians who were willing to settle in her dominions. This request was readily complied with, and Zimmermann was thanked, and received the order of St. Vladimir as a reward. In 1786, when Freideric the Great was attacked by his last illness, he wrote two letters to Zimmermann to invite him to come to Potsdam. On his arrival there, Zimmermann discovered that the king's case was hopeless, and he refused to prescribe any powerful medicine. His visit to Potsdam was the turning point in his life: until then he had been the favourite of the great, and had had many honourable offers made to him from various parts of Europe, but he had not resolution enough to accept them, or they were not to his taste. At last however the honourable post of physician to his Britannio majesty at Hanover, and the title of suile councilor, were offered to him, through the influence of a friend. This offer seemed to satisfy his wishes, and in 1786 he went to Hanover. But the world in which he now lived was as little calculated to give him happiness as that at Brugg. The jealousy of many, and the caprices of his patients, made his situation wretched; and his own dignity too much, and had too just a notion of the duties of a physician to determine the number of his visits and their duration by anything else than the nature of the disease. Those to whom he had made himself obnoxious by such straight forward conduct, did not of course contribute to make his residence at Hanover pleasant. But notwithstanding this, there was at that time no physician in all Northern Germany who enjoyed such unbounded confidence as Zimmermann, and it is clear that he had little time left to indulge in his hypochondriac disposition. During this period of uninterrupted activity in his profession, his only recreation was reading and making notes. He was a patron of the arts, was remarkable for his great ambition, and his love of solitude, and while he was ever longing for the intellectual employment which he should observe, render it still a work of child, to enjoy the pleasures which he might have had. His hypochondriac disposition was thus gradually developed, and increased his love of solitude. He avoided society as much as he could, and spent all his leisure hours in readings and in reflecting upon the duties of his profession. It is remarkable that even during the strongest attacks of hypochondrias Zimmermann appeared to be so much altered. He avoided society as much as he could, and spent all his leisure hours in readings and in reflecting upon the duties of his profession. It is remarkable that even during the strongest attacks of hypochondrias Zimmermann appeared to be so much altered. 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contested attacks on men of unblemished character, and Zimmermann charged them with things which had no existence except in his own imagination. Truth itself seemed no longer to be sacred to him, and various calumny reports respecting the private life of Frederick the Great and other eminent men were set forth as new discoveries, and that in so coarse a manner as to offend the good feeling of the public. The cause of this change in his conduct must be looked for in his discontented disposition, his desire to show the world a new sphere for his talents, and he was not fitted—politics and contemporary history. The peculiar state of his own mind prevented his gaining a clear perception of things, and made him see in the political changes of the time nothing but conspiracies to upset princes and all social order. The Revolution and, especially on the part of the freethinker Dr. Bahrdt and A. Hoffmann, only increased those feelings. He now devoted all his time to the combating of the monsters which his own imagination raised up, with the exception of two hours every day, which he gave to his patients. His diseased imagination represented to him Jacobins, Illuminati, and the promoters of improvements of every kind, as persons animated by the same evil spirit, and he denounced all as criminals who ought to be put to death by the hangman. In order to secure the assurance of all governments against them, he drew up a memorial, which he sent to the emperor Leopold, and which bore the following title: 'Über den Wahnsinn und gegen die aufgestiegenen Häupter gegen die Mordbremder, die uns aufführen wollen, und gegen die Untergrabung und Vernichtung der christlichen Religion und der Fürstengewalt.' It consisted of 370 quarto pages. The emperor intended to place it before the princes at Regensburg, and to call upon the princes of the empire to put an end to the proceedings of the Illuminati. But the death of the emperor, who had testified his gratitude to Zimmermann by a handsome present, prevented this plan being carried into effect. Zimmermann, however, continued his exertions till the year 1704, when his physical as well as mental powers began to decline, and he was obliged to give up all his occupations. His melancholy rose to a deplorable height. The French revolution was making rapid progress, and he fancied that he saw a last chance of raising himself, and going to put him to a cruel death as an aristocrat; he even thought of taking to flight, and as his physician believed that a chance of place might be beneficial, Zimmermann went to Eutin in Holstein. But no means were of avail, and, after three or four months, he returned to Hanover in a worse condition than he had left it. His fear of his enemies was at last increased by the dread of poverty and starvation, a monomania which the most subtle tricks of the cunning tricksters were unable to destroy. Wherever he went he fancied that he was diffusing the impieties of the plagues; in short his mind was completely deranged, and after months of severe suffering, both real and imaginary, he died on the 7th of October, 1795, in the sixty-seventh year of his age.

Zimmermann was one of the most remarkable men of the last century, both as a physician and a philosoper. He possessed an inexhaustible imagination, great sagacity and judgment, and most extensive knowledge not only of medicine, but also of philosophical history, and the whole range of antient and modern literature. The great works which he wrote previous to 1760 are masterly productions of their kind, and, as far as their style and language are concerned, they are still classical, with the exception of a few passages in which French animadversions are thrown into the spirit of the German language. During the latter period of his life his mind was not sound: his nervous sensibility and his hypochondriac disposition had ruined his mental powers, and for all he did during that period he never had any wish to be of any use to the world. Besides the works which we have already noticed, and a number of essays in literary and scientific journals, the following deserve to be mentioned:—1. 'Leben des Herrn von Linsbach,' 1755, 8vo. 2. 'Vertheidigung Friedrichs des Grossen gegen die Gegenen von Mirabeau,' 1763, 8vo. 3. 'Versuch in amuthndigen und lehrreichen Erzahlungen, lauterlichen Einfelln und Philosophischen Remarcken über allerlei Gegenstücke,' Göttingen, 1790, 8vo.; this is a collection of essays which Zimmermann had contributed from time to time to a Hanoverian periodical, and were published in one volume by an anonymous editor; 4. 'Zerstreute Blatter von fremden Inhalts,' edited by a friend of Zimmermann after his death (1790, 8vo.); 5. 'Die Zersetzungs von Linsbach, 1765, 8vo.; 6. A. Zimmermann: 'Krankengeschichte, ein Biographisches Fragment,' Hanover, 1796, 8vo.; Zimmermann's 'Verhältniss mit der Katerina Catharina II., und mit dem Herrn Winckel, zu Leipzig, 1803, 8vo.; 7. 'Zimmermann's Briefe an einige seiner Freunde in der Schweiz, Aarau, 1803, 8vo. ZIMMERMANN, E. A. W. [Ueber.] Zin. This metal, in commerce frequently called Spelter, was first used by the ancients. A specimen of the metal, occurring in zincite, in the sixteenth century, under the name of Zinodium. It does not occur in the native state, but is obtained from its ores, which are chiefly the sulphurated carbonizine zinc, and contained in the zincite the operation by which it is produced from its ores is called distillation by descent. The compound zinc is 6-862; and is forged, 7-295. It undergoes little alteration, even under the combined operation of air and moisture, at constant temperatures. When heated between about the temperature of boiling water and 300° Fahr., it becomes malleable and ductile, so that it is rolled into sheets drawn into wire. It fuses at 773° Fahr., according to Dauvill.; and when cautiously cooled, crystallises, and is a particular. Exposed to a white heat, or the contact of air, it sublimes and is lost. We shall now notice the various ores of zinc, peculiar that two only of them, namely, the sulphuret and carbonate, are usually employed as such. Substances Occurring Crystalized as massive. Primary form the cube. Cleavage parallel to the planes of the rhombo-dodecahedron. Fracture conchoidal. Hardness, scratches carbonate of lime, and is scratched by phosphate of lime. Rather brittle. Color white, and various shades of yellow, green, red, and black. Streak varying with the color from white to reddish brown. Lustre adamantine. Transparent: translucent: opaque. Specific gravity 4-07. Massive Varieties.—Amorphous: crystallized, granular, compact, globular, botryoidal, reniform, chalcedonic, fibrous. Before the blowpipe does not melt per se; but when heated on charcoal, fumes of oxide of zinc form a white coating upon it. When nearly or quite pure, forms colourless solution in nitric acid with the separation of sulphur. Found in great abundance in many countries, both primary and secondary formations, and both in veins and beds. It is abundant in Cornwall and several of the northern counties of England; is also found in New Jersey, North America. Large quantities of the ore of zinc are met with and worked in Germany; they occur also in various other parts of the earth.

Analysis by Arfwedson:—

<table>
<thead>
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<th>Substance</th>
<th>Analysis Data</th>
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<tr>
<td>Sulphur</td>
<td>33-66</td>
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<tr>
<td>Zinc</td>
<td>60-34</td>
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</table>

Some varieties contain small portions of iron and carbon.
Z I N

Oxysulphuret of Zinc; Voltzite.—Occurs in the form of small hemispheres, divisible into thin layers. Fracture conchoidal, irregular. Hardness 4-5. Colour yellowish red, interspersed with brown bands. Lustre pearly on the natural layers, but vitreous or resinous in the other directions. Slightly translucent; opaque. Specific gravity 3-06. Occurs in Cornwall and at Roziers, department of Puy de Dorne, France.

Analysis by M. Fournet:

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<tr>
<td>Sulphuret of Zinc</td>
<td>81</td>
<td>80</td>
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<tr>
<td>Oxide of Zinc</td>
<td>15</td>
<td></td>
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<tr>
<td>Oxide of Iron</td>
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<td>Organic Matter</td>
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<td></td>
<td>100</td>
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Carbonate of Zinc; Calamine.—Occurs crystallized and massive. Primary form a rhomboid. Cleavage parallel to the primary planes. Fracture uneven, conchoidal. Hardness, scratches flour-spar, but is scratched by apatite. Colour white, yellowish white, grey, brown, and green. Streak white. Lustre vitreous. Translucent. Opake. Specific gravity 4-422.

Massive Varieties.—Amorphous; structure granular, compact, reniform, botryoidal, stalactitic; fibrous. This ore occurs rather abundantly, and is found both in veins and beds, in various parts of England, France, and in America.

Analysis by Smithson, (1) from Somersetshire, (2) from Derbyshire:

<table>
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<tr>
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<tr>
<td>Carbonic Acid</td>
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<td>31</td>
</tr>
<tr>
<td>Oxide of Zinc</td>
<td>64</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>100</td>
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</table>

Soluble, with the extrication of carbonic acid gas, in acids.

Hydrous Carbonate of Zinc; Hydrous Calamine.—Occurs usually massive or enclosing other minerals. Texture fine-grained and close. Hardness 2 to 2-5. Colour white or greyish or yellowish white. Dull; opaque. Specific gravity 3-584 to 3-598. It frequently accompanies the preceding species.

Soluble in acids with the extrication of carbonic acid gas.

Analysis by Smithson:

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<tbody>
<tr>
<td>Carbonic Acid</td>
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<td>52</td>
</tr>
<tr>
<td>Oxide of Zinc</td>
<td>69</td>
<td>36</td>
</tr>
<tr>
<td>Water</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>


Massive Varieties.—Amorphous; structure granular, compact; botryoidal, reniform, stalactitic, fibrous. Sometimes investing other bodies.

Before the blow-pipe froths, and covers the charcoal with white flocks.

Found at Holywell in Flintshire, Fuhlan in Sweden, at Rammelsberg in the Han, and Schemnitz in Hungary.

Beudant's analysis of the substance from Schemnitz gives:

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Sulphuric Acid</td>
<td>29-8</td>
</tr>
<tr>
<td>Oxide of Zinc</td>
<td>28-5</td>
</tr>
<tr>
<td>Oxide of Manganese</td>
<td>0-7</td>
</tr>
<tr>
<td>Oxide of Iron</td>
<td>0-4</td>
</tr>
<tr>
<td>Water</td>
<td>40-8</td>
</tr>
</tbody>
</table>

100-2


Before the blow-pipe yields water, but no carbonic acid; becomes milk-white, and melts into a clear colourless glass. Soluble without effervescence in nitric or hydrochloric acid, and slowly in sulphuric acid.

Found hitherto only in the calamine-mines of Altenberg, near Aix-la-Chapelle.

It has not been perfectly analyzed, but consists of oxide of zinc, a little cadmium, an earth, and much water, probably combined with phosphoric acid.

Siliicate of Zinc; Willemite.—Occurs crystallized and massive. Primary form an obtuse rhomboid. Cleavage easy, in a direction perpendicular to the axis. Transverse fracture conchoidal. Hardness, readily scratches glass and phosphate of lime; is scratched by the knife. Colour usually yellow, brownish, or reddish yellow, sometimes white and transparent. Specific gravity 4-18.

Before the blow-pipe, the crystals partly lose their transparency; with borax, a globule is obtained, which is transparent, with a small nucleus of silica floating in it.

Found at Moresnet, Aix-la-Chapelle.

It yielded by analysis:

<p>| | |</p>
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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Silica</td>
<td>72-33</td>
</tr>
<tr>
<td>Oxide of Zinc</td>
<td>27-97</td>
</tr>
</tbody>
</table>

Hydrous Siliicate of Zinc; Smithsonite; Electric Calamine.—Occurs crystallized in attached and globular or botryoidal aggregations of crystals. Primary form a right rhombic prism. Cleavage parallel to the lateral planes. Fracture conchoidal, uneven. Hardness, scratches flour-spar, and is scratched by felspars. Brittle. Colour white, blue, green, yellow, and brown. Streak white. Becomes electric by heat. Lustre vitreous. Transparent; translucent. Specific gravity 3-373. When heated in a glass tube yields water, and becomes milk-white. Heated before the blow-pipe with borax, it dissolves into a colourless glass, which does not become milky on cooling.

When powdered and heated in hydrochloric acid, the oxide of zinc is dissolved, and the silica gelatinizes on cooling.

Found at Matlock in Derbyshire, and other parts of England; in Scotland, Germany, and many other parts of Europe.

Analysis by Smithson:

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Silica</td>
<td>25-0</td>
</tr>
<tr>
<td>Oxide of Zinc</td>
<td>69-3</td>
</tr>
<tr>
<td>Water</td>
<td>9-0</td>
</tr>
</tbody>
</table>

Aluminate of Zinc; Automalite. [Garnite.]

Oxide of Zinc and Oxide of Manganese; Red Oxide of Zinc; Spardalite.—Occurs in embedded small nodules and massive. Cleavage parallel to all the planes of a regular hexagonal prism. Brittle. Colour white. Hardness 4 to 4-5, easily scratched by the knife. Brittle. Colour bright red. Streak orange-yellow. Lustre adamantine. Transparent. Specific gravity 5-4 to 5-5.

Massive Varieties.—Amorphous, structure crystalline, granular.

Before the blow-pipe insufible per se; but with borax gives a yellow transparent glass. In nitric acid dissolves without effervescence.

Found only in New Jersey, North America.

Analysis by Berthier:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxide of Zinc</td>
<td>88</td>
</tr>
<tr>
<td>Sesqui-oxide of Manganese</td>
<td>12</td>
</tr>
</tbody>
</table>

100

Sulphuret of Zinc and Iron; Marmatite.—This is a definite compound of sulphuret of zinc and of sulphuret of iron; its structure is lamellar, and colour black; indeed it appears to be black blende united with sulphuret of iron. It is found at Marmato, province of Popayan, South America.

Analysis by Boussingault:

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Zinc</td>
<td>43-0</td>
</tr>
<tr>
<td>Iron</td>
<td>15-7</td>
</tr>
<tr>
<td>Sulphur</td>
<td>28-6</td>
</tr>
<tr>
<td>Pyrites</td>
<td>1-7</td>
</tr>
<tr>
<td>Quartz</td>
<td>8-0</td>
</tr>
</tbody>
</table>

100

The quartz is a mere accidental admixture.

Bi-selenuret of Zinc and Protosulphuret of Mercury;
The distinguishing characters of Zingiberaceae are—first, the structure of the seed, in which a fleshy body is interposed between the embryo and the albumen, entirely enveloping the former. This body is called vitellus by Brown, and is the remains of the innermost integument of the ovule, which is unab sorbed during the progress of the development. A true stamen contains the 2-celled anthers; and with this structure is combined decidedly aromatic properties. But the distinction between Marantaceae and Zingiberaceae depends, as pointed out by Lindley, on more important considerations than these. In Zingiberaceae, he says, the brown has not only the stamen is always placed opposite the labellum, or anterior division of the inner series of the corolla, and proceeds from the base of the posterior outer division; while the sterile stamens, when they occur, are posterior and on the labellum. But in Marantaceae the fertile stamen is on one side of the labellum, occupying the place of one of the lateral sterile stamens of Zingiberaceae. This peculiarity of arrangement indicates a higher degree of irregularity in stamen-number, and also extends to the other parts of the flower. The suppression of parts takes place in the latter in a symmetrical manner; the two posterior divisions of the inner series of the perianth are occasionally absent, consequently the suppression of the anterior stamen also. In Marantaceae, on the contrary, the suppression of organs takes place with so much irregularity, that the relation which the various parts bear to each other is not always apparent: instead of the central stamen being perfect, while those lateral ones are abortive, as in Zingiberaceae and most Orchidaceae, or of the central stamen being abortive and the two lateral ones perfect, as in some Orchidaceae, it is the central and one lateral one that are suppressed in Marantaceae. Taking Zingiberaceae and Marantaceae together, they are nearly alike as Musaceae, especially in the character of their leaves; but all Musaceae have either five or six stamens, with a calyx and corolla alike. With Irisaceae these orders also agree in their inferior florescence, and the tripartite division of their stamens, but the left sterile or deform character of these organs in Zingiberaceae and Marantaceae distinguishes them. Their aborted stamens ally them with Orchidaceae, from which however they differ in the absence of the cohesion of stamens and style.

The following genera belong to this order:

1. *Zingibera*.
2. *Alpinia*.
3. *Costa*.
4. *Curculon*.
5. *Globus*.
6. *Hitchkinia*.
7. *Kempferia*.
8. *Asarum*.
9. *Cassianara*.
10. *Ganadza*.
11. *Deltaria*.
12. *Donae*.
13. *Dorado*.
14. *Dirada*.
15. *Phoeberia*.
16. *Hedycesium*.
17. *Pepperdium*.

Nearly all the species are tropical plants, and by far the greater number inhabit various parts of the East Indies; they are also found in Africa and America.

The plants belonging to this order possess great beauty, on account of the development of their floral envelopes and the rich colours of their bracts. They are also employed in the medical, and especially in the cosmetic, art as the true ginger. The Z. officinarum and common Ginger, has subsessile, linear-lanceolate, smooth leaves, elevated oblong spikes, acute bracts, and a 3-lobed lip. The rootstock of this plant is the ginger of commerce. It is imported into England from various quarters of the world, but more especially by the East and West Indies. This plant is now grown in almost all parts of the globe in tropical climates, but it seems to have been originally indigenous in the East Indies. The ginger plant may be propagated by seeds or by cuttings of the root. When the cuttings are planted out in spring, they is the mode generally pursued in its cultivation, in course of three or four months their rootstocks have a mild aromatic flavour; and it is in this state they are used for the preparation of what is called preserved ginger. At the end of the year or the beginning of the tenth month, they are considered fit for the market of commerce. The rootstocks are then prepared in two ways: either by scalping them in boiling water, and drying them with artificial heat; or by peeling, and drying them in sunshine, without immersing them in hot water. The former is the mode of producing *Thick ginger,* and is used for that of the white ginger of commerce. The chemical composition of the rootstock of ginger, according to Bucholz, is as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow volatile oil</td>
<td>25</td>
</tr>
<tr>
<td>Acidulous extractive</td>
<td>100</td>
</tr>
<tr>
<td>Soluble gum</td>
<td>35</td>
</tr>
<tr>
<td>Bassarin</td>
<td>150</td>
</tr>
<tr>
<td>Anise</td>
<td>10</td>
</tr>
<tr>
<td>Lignin</td>
<td>60</td>
</tr>
</tbody>
</table>

Ginger is one of the most agreeable of the hot spices, and is consequently much used as a condiment. It also enters into the composition of many medicines, as it acts as a carminative.

2. *Zernobset,* the Broad-leaved Ginger, is a native of the East Indies, and has delicate stems; bifid and sickle-shaped leaves, a spike of small flowers, and a yellow scarlet lip. The rootstock of this plant is much used in the East for cuttlefish and cephalopods, but is not taken internally.

The genus *Alpinia* has an uncrowned anther, the inferior limb of the corolla with one lip, the epicalyx with three lobes, the seeds with three caryopses, and the rootstock is now in honour of Prosper Alpinus, an Italian physician and botanist, who lived in the sixteenth century. This physician to the Venetian consul at Cairo, and then stayed in Egypt made several excursions into the desert, and collected more information with regard to the natural history than had been done by any previous traveler. On his return from Egypt he published a work on the natural history of that country, and especially on the plants of other countries which he had collected there, through the courtesy of that part of the world. He was professor of botany at Padua, and died in 1608 at the age of 64.

This is one of the largest genera of Zingiberaceae plants, one of the species, *Alpinia officinarum,* puts a part of the seeds known by the name of Cardamom (Cardamomum). They are all splendid plants, and form a handsome addition to our hothouses. They require a rich soil, and plenty of room. *Rascroo,* a handsome species, is best cultivated as an aquatic.

*Hedychium* is a beautiful genus of plants. They have a graceful stem, and all the species are called Ginger-flower. The anther is naked, the tube of the corolla is long and slender, with both limbs triplicate, and the styles 3. In cultivation, the species, of which *H. angustifolius* is a one of the handsomest, they require a rich and large pots to make the plants flower well.

*Kempferia,* a genus named after Engelhard Kempter, the Japanese medicine and medicine man of the 2-lobed crest and tube of the corolla long and slender, with both limbs triplicate. The plants belong to this genus have a stem. There are several species, all of them native of the East Indies, and all are known by the name of *Gala* flowers. Some of these plants have a large a species of the genus, with a sharpish acid taste, and are used as condiments and medicines.

*Roconta,* a small genus of the order, was named in honor of the Rosco, the historian of the *Medici,* who published a monograph of the plants belonging to the order Zingiberaceae.

The genus *Globosum* contains species which produce spires of smoky-coloured berries, which are about the size of grapes, and are sometimes thrown out in great profusion by the East and West Indias. This plant is now grown in almost all parts of the globe in tropical climates, but it seems to have been originally indigenous in the East Indies. The ginger plant may be propagated by seeds or by cuttings of the root.
division Heliospides of that tribe. It was named by Linnaeus in honour of Dr. John Godfrey Zinn, professor of physics and botany at Göttingen, and author of a work entituled "Physiologia Plantarum Horti Academici et Agri Göttingensis," which was printed in 1749. He also wrote several treatises on various points of physiology. He was a pupil of Haller, and followed his master in the adoption of his system, in opposition to that of Linnaeus. He died in 1758.

This genus very closely resembles Rudbeckia, with which it was originally confounded by Zinn himself. It has a chaffy receptacle, the seed-down consists of two erect unequal awns, the calyx imbricated, somewhat ovate, the petals, however, the most remarkable part, is divided. All the species are natives of South and North America; they are annuals, and form handsome border-plants in gardens. They may be propagated by seeds, which should be sown on a slight hothot bed early in the spring, under glass, and they should be pricked out on another bed previously prepared to receive them, where they may remain till the summer is advanced, when they may be planted out in the borders.

ZINZENDORF, NICOLAUS LUDWIG, COUNT VON, the founder (reser) of the sect of the Moravian Brothers, or Hermits [Moraviens], was the son of Count Georg Ludwig von Zinzendorf, chamberlain and state-minister of Augustus II., elector of Saxony and king of Poland. His mother, who showed so early a mark of her father's early age. His mother made a second marriage with the Count von Natzheimer, a Prussian field-marshall; and young Zinzendorf was educated under the care of his maternal grandmother, the widow of Baron von Gebsheim, and regularly at the court of Gottingen, where the hymns and treatises on religious subjects, and corresponded in Latin with several distinguished divines and scholars. This lady lived on her estate in Lusatia, where she was frequently visited by pious men; the celebrated Jacob Spener is said to have conversed with her, and to have imparted to her the knowledge of the divine, which was considered the head of the Pietists, which produced in the mind of young Zinzendorf that religious tendency which made him notice what a marked character he had formed 50 years ago led him to reform his imagist faith. In 1710 Zinzendorf was sent to the Paedagogium at Halle, which was then directed by Francke, to whose particular care he was intrusted. In that school Zinzendorf remained six years, and as Pietism was the ruling principle there also, he abandoned himself entirely to religious pursuits, and founded a mystical order among his fellow-pupils, which he called Der Orden von Senk-korn, or the Order of the Grin of Mustard-seed, in allusion to the passage in St. Matthew (xi. 31, 32). His family was a prosperous one, having purchased the occupations of a young nobleman, whom they wished to bring up as a statesman, and not for the church, which had been deserted by the Protestant nobility of Germany since the bishops and rich prebendaries had been abolished by the Emperors. David according to the order of the Electress of Halle, sent him, named Christian David, a carpenter from Moravia, who had travelled much; he belonged to the obscure sect of the Moravian Brothers, who professed the doctrines of John Huss in some remote corners of Moravia. David, who was ordered to take the youth to be educated under the canonesses, under which they lived under the Austrian government, Zinzendorf invited him to settle on his estate, and to bring thither such of his friends as would prefer liberty of conscience in a foreign country to religious oppression at home. He and his flock soon attracted the attention of the summer of 1722, with three men, two women, and five children, to whom the count gave some land and a wooden house situated at the foot of the hutberg, or pasture-hill. "Such was the beginning of the celebrated colony of Herrnhut; forever renowned which signifies 'the lord's guard,' was given by Zinzendorf to the settlement in allusion to the double meaning of the word 'Hut,' which signifies 'guard,' as well as 'a place where flocks are guarded; that is, a fortified settlement." The settlers were so poor, that the countess presented them with some clothes and a milk cow, to prevent the children from starving; but they were industrious and good people, and soon got into better circumstances.

Zinzenzendorf conceived the idea of forming a sect, and he published the principles of the new creed in several pamphlets, which sometimes contradicted one another, but from which we may nevertheless see that he did not intend to separate from the Augustan Church. Herrnhut was destined to he the centre of that sect, and he invited other Moravian brothers, whose religious principles seemed to him to correspond best with his own, to settle in the new colony, to which he gave his solemn benediction. He supported the settlers with great liberality, and he and his flock soon attracted the attention of Germany and other Protestant countries. The mor
of his adversaries increased with that of his followers; he
was attacked publicly and privately; but he also received
proofs of respect and esteem from the highest quarters:
the emperor Charles VI. invited him to his court at
Vienna, but Zinzendorf declined this honour as well as
many others, and remained faithful to his principles.
Heathen, Zinzendorf went to Copenhagen in 1731, for
the purpose of inquiring into the state of the Danish missions
in Greenland, and the East and West Indies; and he despatched
several of his disciples as missionaries to those countries.
This is the origin of the system of the Moravian missions,
which are now scattered over the world. The king of
Denmark, Christian VI., rewarded his zeal with the Knight
Cross of the Order of Dannebrog, which Zinzendorf
accepted; but he sent it back five years afterwards. In
1734 he returned to Stralsund, for the purpose of being
ordained a minister of the Lutheran church. As
his enemies were numerous, he adopted the name of
Ludwig von Freideck, and engaged himself as tutor in the
house of a merchant named Richter. After having been ex-
amined by the members of the consistory at Stralsund, he
received ordination and preached in the chief church of that
town. It is said that he became a tutor because he had
devoted all his property to the establishment of his colony
of Herrnhut, and wanted a livelihood; but this is scarcely
credible, for he had lost his property, he devoted his
herents would have supported him; or his brother-in-law,
the count of Reuss-Ebersdorf, who was his sincere friend,
would have supplied him with the necessary means.
Besides, Zinzendorf continued to travel about the world;
and also on more frequent occasions in Hesse-Cassel,
where he often went to Stralsund for the purpose of
the Moravian missions. This was because he spent large sums at once, he was never obliged
to give up his plans for want of funds. In 1735 he intended
to go to Sweden, but, on his arrival at Malmeoe, he
was ordered to leave the kingdom immediately. Upon this he
sent his letters to the king of Sweden, Frederick
given in a pamphlet, of which he sent copies to the principal
courts of Europe. This made him new enemies, and in
1736 he was banished from Saxony on the charge of having
introduced novelties and preached dangerous prin-
ciples, which endangered the authority of a Lutheran
prince and threatened to weaken the authority of the government and to bring
into contempt the services of religion as practised by the
Protestant church. Zinzendorf took refuge with his
brother-in-law, the count of Reuss-Ebersdorf, who was
sovereign minister of the empire; and it was only in 1747
that he was allowed to return into Saxony. In the same
year, 1736, he went to Holland, at the request of the
princess-dowager of Orange, and founded the colony of S:"Heer-
endyk (the lord's dyke), which was afterwards transferred
in 1737 to South Carolina, with the assistance of the Livonian
and Esthonian languages, and established several Moravian
colonies there. On his return he was invited to Berlin by
the king of Prussia, Frederick the Great, who had already
undertaken the education of Zinzendorf, whom he believed
to be a vulgar fanatic; but so soon was the count intro-
duced to the king, and spoke to him with that gentle
and noble persuasion which had always distinguished him,
than the king changed his opinion. Their conversation lasted
three days, and the king was pleased with him that he
promised to acknowledge him as bishop of the Moravians,
if the count would be ordained. Zinzendorf having agreed
to the proposal, the Reverend Jablonski, who held the
office of the first of court preachers, ordained him
bishop (May, 1737). The ordination of a bishop by
who was not a bishop, was hardly in accordance with the
canon law; but as Luther had ordained a bishop (Ams-
dorf), although he himself was no bishop, the practice
seemed to be justified; and the remonstrations finally con-
tributed to raise Zinzendorf in the opinion of the world,
although, strange enough, the king of Prussia would not
allow him to preach in public.
About this time Zinzendorf was informed that he might
return to Saxony if he would sign a paper declaring
himself a churchman and that he would not be deterred
against him by slanderers, but he nobly refused to do so,
and continued to live in exile. In the same year (1737)
he went to London, and held private meetings in his house,
where were attended by a great number of both
pious and curious persons, and led to the establishment of
a Moravian congregation. Wesley received him with
great kindness and esteem: and it is said that each of
them tried to convert the other, but of course without
success. They were often engaged in discussions on
religious subjects, and they argued particularly the question,
whether men could attain perfection in this world, which
Wesley affirmed, but Zinzendorf denied. From London
Zinzendorf went to Spain, where he was received with
much favor, but he declined the post of governor of
the West Indies, and on his arrival there found that the
Moravian missionaries who had been sent thither a year
before had been thrown into prison, and the
chaplains shut up by order of the local government. He
succeeded in obtaining their liberty, and defended his
their cause with so much eloquence that the governor
remained not to obstruct the religious services of the
bewitch. He now returned to Germany, made a be
Switzerland, where Vernet and other French writers
considered him as the most learned and profound
ist, but avoided any intimacy with him; and in 1738
set out for his great tour to the British colonies in
America. He was accompanied by his daughter, who
then was only sixteen. No sooner had he arrived in
Pennsylvania than he was assaulted by accusations of the
regulating and revolting description, which he supported
for his usual calmness and forbearance. At Germanias he
performed divine service regularly every Sunday, and
made himself so popular that the inhabitants, who were
indulging in public revels and debauches, went to the
office with visible satisfaction, and being afterwards
obliged to continue his travels, wrote to Hermut, to
caused one of the preachers there to come over to America
at his own expense, and to take his place as minister.
In Germany, he had often received the visit of
his people, with respect, and was supported at his own expense, for the use of the Moravian con-
gregation, which had hitherto assembled in a barn. At Phila-
phia Zinzendorf delivered a Latin speech in presence of
numerous auditory, to whom he declared the necessity
of giving up the right of arbitrary manner in all the
rural policy of all the country, and Zinzendorf was accused of having consulted
them to such proceedings. However, so far as he
ever had ever had the slightest idea of propagating his
opinions by other means than those of reasonable means,
he invited them to write a letter to him in order to justify
himself. On arriving at Riga he received an order from
the empress Elizabeth to leave the empire immediately
and he was put under a military escort, which accompanied
him on his return as far as the Prussian frontier.
He went on, however, without the permission of the
inhabitants. A few years after this he was allowed to
return to Saxony (1747). During his exile the brethren
increased in number and wealth, and their goods
industry and trade had multiplied many times, so that the
people of rank, so that the government gradually treated
them with less severity. Zinzendorf's numerous
powerful friends also pleaded in his favour, and the
government was finally persuaded of the relative
honesty by an offer of the brethren to the archbishop
Bartholomaeus Thumstein, to shut the castle
door of use, as the castle was half in ruins and the
barren, and for which the brethren offered to give
hundred and fifty thousand thalers (25,000$)
be might be allowed to establish there a settlement.
The Saxon government assented, full liberty of refuge
was granted to the brethren, and Zinzendorf returned
to Herrnhut. In 1749 he went to England, and through
protection of Archbishop Potter, General Oglethorpe,
and several other men of influence whose services
secured an act of parliament for the establishment of
Moravian colonies and missions throughout the British possessions in
North America. He now set out for America to carry
his undertaking into execution, and after an absence of
years he returned to Herrnhut. His last great tour was in
1757, when he visited his friend Von Wavettke at Montreux
in the canton of Bern in Switzerland, where he proved
ZIRCONIA. [Zirconium.]

ZIRCONIUM, a peculiar metal obtained from the earth or metallic oxide zirconia. It is procured by heating the double fluoride of zirconium and zirconium, or zirconium with potassium in a glass or iron tube. When the cooled metal is treated with water, a black powder very much like charcoal remains, and this is zirconium, containing however some hydrite of zirconia, from which it is freed by hydrochloric acid; being afterwards washed with hydrochloric of ammonia and alcohol, it remains nearly pure.

The properties of zirconium are,—that under the burner it assumes the lustre of iron, and is compressed into scales resembling graphene. When heated in the air, even in a yellow redness, it takes fire, and by combination with carbon is converted into oxide of zirconium, or zirconia. Alkalies or acids, except the hydrofluoric acid, produce little effect upon zirconium, but this dissolves it with the evolution of hydrogen gas.

Zircon or zirconia, constituting the earth zirconia, exist in the state of silicate in the zircon, and also as a titaniate in the masonite. [Titanium.] Its properties are,—that it resembles alumina in appearance; is inodorous, insoluble, and insoluble in water. It is sufficiently hard to scratch glass. When heated by the blow-pipe, it phosphoresces vividly.

It appears to be composed of—

One Equivalent of Oxygen . . . 8
One Equivalent of Zirconium . . 22
Equivalent . . . . 30

Zirconia forms salts with acids, which possess the following characters:—They have an astringent taste; they are precipitated by the caustic alkalies and acids, and an acid solution of zirconia is boiled with sulphate of potash, a subalsalt of zirconia is formed, and being insoluble in water. Infusion of galls produces a yellow precipitate, and phosphates of soda a white one; carbonate of zirconia, when recently precipitated, is soluble in bi-carbonate of soda and of potash.

ZIRKONIT. [Kirkniitz.]

ZISKA, or more correctly ZIKA, OF TROCNOW, JOHN, the celebrated leader of the Hussites, was born under a black-tree in the open fields, near the town of Trocnow, in the circle of Budweis, in Bohemia, about 1360, or, as some say, about 1380. His father, the lord of Trocnow, was a Bohemian noble of more credit than wealth. John Ziska lost one eye at an early age, and hence it was said that he was called 'Ziska,' which 1505 signifies in the Bohemian language. But this fiction; Ziska was the name of his family, and it does not signify one eye either in Bohemian or in Polish.* At the age of twelve John Ziska was received among the pages of Wenceslaus, king of Bohemia and emperor. In 1389 he became distinguished among his fellow-pages by his gloomy temper and his love of solitude. Disgusted with the trifling and capricious character of Wenceslaus, Ziska left the court, and sought his fortune abroad. For some time he served as a volunteer in the army, and distinguished himself against the French. He afterwards went to Poland, and commanded a body of the Bohemian and Moravian auxiliaries of King Wladislaw II., Jagiello, in his war against the Knights of the Teutonic Order. The dreadful battle of Tannenberg (10th of July, 1410), in which the grand-master Ulrich von Jungingen was slain, with 40,000 knights and soldiers, was decided in favour of the Poles by those auxiliaries, and John Ziska distinguished himself so much that King Wladislaw rewarded him with a chain of honour and other rich presents. The hero of that battle by that battle, Ziska fought against the Turks in Hungary, and having again entered the English army, won fresh laurels at the battle of Azincourt (1415). After this he returned to Bohemia, and accepted a place as chamberlain at the court of Wenceslaus (1419), against his own inclination, and for reasons unknown.

Ziska was an adherent of the doctrines of John Huss, and the fate of this reformer and his friend Jerome of Prague, who were burnt at Constance, in 1415, was considered by him as a signal to his country. His hatred of the Roman Catholic clergy was increased when his favourite sister was seduced by a monk. He became conspicuous among those Bohemian nobles who urged King Wenceslaus to revenge the insult, and to pro-

* There are still Ziska’s living in Bohemian.
test the followers of Huss against the decisions of the synod of Constance. The king, seeing him one day from the window of his palace walking in a thoughtful mood, asked him what he was meditating about. 'Upon the bloody affront,' answered Zizka, 'which the Bohemians have suffered at Constance.' 'It is true,' replied the king, 'and I know it too; but if you leave it as it is neither in your interest nor in your power to revenge it. If you can do so, I give you my royal permission.' It is said that this circumstance first inspired Zizka with the resolution of defending with his sword the religious liberties of his country. But Wenceslaus was a man of coldness and tact, and he was alarmed at his own resolve, and his perplexity was augmented when he was informed that the Bohemian nobles had resolved to take up arms in defence of the dignity of his own person. Their leader was Nicholas of Hussa, Jerke, and Zizka was not venturing to appear before the king though they acted with his permission. Zizka however persuaded them to follow him, and having been received by the king, spoke to this effect—'Sir, behold a body of your majesty's loyal subjects. We have brought our arms, as you commanded. Show us your enemies, and you shall acknowledge that our weapons can be in no hands more useful to you than in those which hold them. Take your arms, replied the king, after a moment's hesitation, and go to conduct these people; your presence recommended him to the confidence of his party. But the king's energy was not real; he did not protect the followers of Huss; and the Roman Catholic party became still more insolent. On July 18, 1419, a new battle was fought at Mount Valtice outside of the walls of the city of Breslau. It was the battle of Valtice where Zizka was again victorious, and the Hussites were again victorious. Rut the emperor, after the battle, inscribed the property of the town of Zizka as a crown of honor to his majesty. They retreated towards Moravia, and were sore pressed by Zizka that they crossed the frozen Isga in their bodies, and, as the ice broke, about 2000 of them were drowned. In the same year Zizka obtained a decree from the Emperor to be elector of Saxony and Brandenburg. The Saxons however were excellent soldiers, and on their first contact with Hussites were so well received that they retired in confusion, and then stood still facing their enemy with the assurance of an overwhelming victory. They fell into a trap and they believed that nobody could resist them. The first Zizka approached on his cart and said:—Well, brethren, I thank you for all your past services: if you now done your utmost, let us retire.' This noble chide roused their fanatical courage and in a second attack the Saxons were routed and left 6000 dead on the field. Siegmund now saw that he could never conquer Bohemia, and he proposed an arrangement, to which he was the more inclined after some of the Bohemian states had been taken and Wenceslaus was crowned. He removed to Prague and sent Prince Korybut to Pardubitz as his vicere. But Korybut, being only supported by part of the Hussites, could not maintain himself, and was compelled to retire to Lithuania. On the other hand there was great joy for Zizka, made by the victory, although his own authority was not shaken, the animosity between the minor sects of the Hussites was too great to allow the prospect of a lasting political union among them. Siegmund proclaimed to grant full religious liberty to the Hussites, and to appoint Zizka governor of Bohemia and her dependents with great power and privileges. But Zizka did not like to complete the treaty, which was ready to be concluded after an interview had taken place between himself and the emperor. He found a convenient pretext to break the terms of the treaty in his demand for equality and with the confidence of a sovereign his. Zizka gained the county of Duchcov during the negotiations. Zizka laid siege to the castle of Prague, which he took in 1421, and there found four cannons, the first which he had in his army. He soon increased his artillery, and he procured a great quantity of small fire-arms, which had hitherto been very little used in warfare. He gave fire-arms to a considerable part of his army, and from this time they gradually became general. The Hussites were now in a new position, and they were very efficient in cavalry, and, in order to protect their infantry against the attacks of cavalry, he invented, or rather introduced again, an ancient kind of barricades, made of baggage-carts, which is known by the German name von Wagen, or wagon defence. These were not the only weapons of Zizka, whose name will ever be conspicuous, not only as a general, but also as an engineer. In the year 1421 Zizka lost his other eye by an arrow during siege of the castle of Raby; but he nevertheless continued to hear his food in the town of Orlich he was encamped in cart, and he arranged the order of battle according to the description of the ground made by his officers. In this difficult business he was greatly supported by his canvas and his complete geography of Bohemia. Meanwhile Siegmund had levied a new army in Germany, the flower of which was a body of Polish Hungarian horse, who were considered the best in Europe, and were commanded by an Italian officer of great experience. The Hussites advanced into Moravia in January, 1422. Historians speak of the onset of Zizka as a shock beyond all credibility, and it appears that they have not exaggerated it. The imperial infantry made a stand at all, and the horse took to flight after a brief battle. When the battle was over, Zizka and his followers retired to Prague, where he was appointed the governor of Bohemia. Zizka became a Roman Catholic, and was received with great joy by the Bohemians. Zizka was succeeded by Wenceslaus, who was elected king by the Bohemians.
asked who was buried there, and being informed that it was Zizka, he cried out in Latin, 'Phui, phui, mala bestia, quae mortua etiam post centum annos terret vivos!' (Lo, the wicked beast, one hundred years dead, and still frightens the living!) The emperor was actually so frightened that he left the church without staying, and would not stay the night at Czsalu, but proceeded on his journey. There is a common but idle tale that Zizka on his deathbed ordered his skin to be tanned, and put over a drum in order to frighten his enemies after his death; and it is also said that the insides used that drum in many a battle; all this is fabulous.

After Zizka's death the negotiations with the emperor were broken off; the Taborites chose Procop the Holy for their leader; the Orates, Krossins; and the Orphanites, Peter of Vratislav. The war continued for nearly two years more, till it was finished by the treaty of Prague, in 1433, in consequence of which Siegmund was acknowledged king of Bohemia.


ZITTAU, a town of Upper Saxony, is the kingdom of Saxony, in 50° 52' N. lat. and 14° 45' E. long., is pleasantly situated in a small valley on the river Mandau, not far from its junction with the Neisse. It is surrounded by forest in most parts and was nearly destroyed in 1579 by the Austrians, who besieged it, of which occasion 600 houses were burnt, it was rebuilt in a much better manner, and is reckoned, after Dresden and Leipzig, one of the handsomest towns in Saxony. It has 1400 houses, 1 presbytery, and 69 Protestant Protistus. It is the centre of the linen manufacture, and of the linen and damask trade of Saxony, and, on account of its great traffic, has been called Little Leipzig. There are manufactories of linens, woollens, cotton yarn, leather, dyes, for the establishment of gardens, &c. The magistrates have extensive privileges, with jurisdiction over 45,000 inhabitants, for thirty-five mostly large manufacturing villages, and large estates, belonging to the town. The public revenue is therefore considerable, and all the institutions well provided for. There are five churches, a gymnasium, an admirable town freeperson, and a seminary for schoolmasters, a school of industry and Sunday-school, numerous well-founded charitable institutions, an orphan asylum, a savings-bank, the rich hospital, &c. It is famous as a dry goods and theatre. Some of the churches are handsome buildings, especially the new church of St. John. The city library, the largest in Upper Lusatia, contains 13,000 volumes; a cabinet of natural history; and many curiosities, among which are a letter sent to the emperor by the 1th of June, 1609, by the emperor Rudolph II. to the Bohemian Protestants, securing to them the free exercise of their religion. The necessaries of these letters patent by the emperor Mathias, in 1499, was one of the first and principal causes of the Thirty Years War. There is still a Bohemian Protestant community of 1000 persons in the suburb, who have a church in the town. The town is surrounded by fine public promenades, planted with trees, from which there are extensive views towards Bohemia.

The export trade is very considerable: that of linens and damasks is to the amount of 500,000 rix dollars annually. There is likewise a profitable transit-trade to Bohemia. Near Zittau is the Lausche, a mountain belonging half to Bohemia and half to Saxony, from which there is a very fine and extensive prospect of Upper Lusatia, and part of Meissen, Bohemia, and Silesia.

(Z.) Zizka, the Common Jujube, has ovate, retuse, toothed, smooth leaves; prickles absent or twin; and an ovate oblong drupe. This plant is a native of Syria, from whence it has been introduced into Europe. It is now cultivated in many parts of the south of Europe, where its fruit is known as the Jujube. It has yellow-greenish flowers, two or three of which grow together. The fruit is of a blood-red or saffron colour, and has a sweet granular pulp. In Italy and Spain it is eaten as a dessert when fresh, and in the winter season when dried. It is used in the quantities in the markets of Constantinople. The Jujube is commonly planted by the Turks of Constantinople before their coffee-houses for the sake of its shade. Dr. Hamel recommends the general introduction of the tree on account of the seeds for medicinal use. The fruit is somewhat acid; the flesh is firm, and, when dried, forms an agreeable sweetmeat. A syrup made with it is recommended in coughs and catarrh, and lozenges of it are used for the same purpose. The fruit does not ripen in Great Britain nor in Paris, but it does in the south of France. This plant was introduced into England in 1640. Although it attains a height of 20 or 30 feet in its native countries, it does not grow to anything like that height here. It produces a soil that is dry to one that is moist. It is easily propagated by cuttings of the roots, or by suckers, which it throws up in great abundance. The seeds obtained from plants grown in Italy will germinate freely when sown in this country.

(Z.) Zizulaeus. Chinese Jujube, has ovate oblong, acute, serrated leaves, glabrous, except beneath, along the nerves; pubescent branches; reflexed petals; twin straight prickles; and ovate drupe. This plant is a native of China, and has greenish white flowers. It has a brownish, small, rough, and calcaneous calyx. The fruit is sold in the markets of Canton during the autumn.

(Z.) Z. spina-Christi. Christ's Thorn, has ovate, toothed, smooth leaves, pubescent beneath; prickles twin, one straight, the other incurved; the peduncles eorymbous; the flower ovoid-globular; the fruit ovoid, 2-inch long, is covered with thorns, and is a native of the North of Africa, of Palestine, E. of Asia, and Egypt. The flowers are yellowish green. The fruit is oblong, about the size of a scone, and much eaten in Egypt and Arabia. This plant has plant branches, and
is round and surrounded by numerous long filiform tenta-
cula. The *Alcyonides Scoticus* was found in four fathoms
of water off Loch Ryan.

4. *Actinia*, Linnæus, now restricted to such species as
have simple tubular retractile tentacula, and adhere by a
broad base. Ehrenberg has separated such *Actinae* as
have a glandular epidermis, under the name of *Oribrina*.
From the glands protrude long filaments, the uses of
which are unknown. The tentacula of all the species are
(contrary to the supposed of Ehrenberg) perforate at
their extremities. (*Actinia.*) The subgenus *Adamaea*
has been constituted, by Professor E. Forbes, for the
reception of the curious parasitical *Actinia maculata*, which
envelopes the mouths of dead shells, generally selecting
such as have been previously invested by the *Aleyandonium*
echinatum. As such shells are frequently inhabited at
the same time by the Hermit Crab, not a few naturalists
have mistaken the coincidence for some necessary and
mysterious friendship of the zoophyte for the crustacean.

5. *Anthea*, Johnston, includes such *Actiniae* as have
not the power of retracting their tentacula. Several of
the species grow to a large size.

p. 222, fig. 33.

in which the entire disk is divided at the margin into more
or less rounded lobes, which bear short simple tentacula.

Example, *A. dactylus*, Phil. Trans., *viii.* tab. 18, fig. 8.

7. *Capnea*, Forbes, of which one species only is known.
The disk is round with several circles of exceedingly short
or simple tubercular retractile tentacula, and the body is in part
invested with a peculiar epidermis, which is divided at the
margin into eight lobes.

Example, *C. sanguinea*. *Annals of Natural History,*
vol. vii., pl. 1, fig. 1. Irish Sea.

C. Sea-Anemones having more or less pinnate tenta-
cula.

8. *Actinaria*, Quoy and Gaimard. Such as have the
entire disk covered by very small villose ramified tenta-
cula.

Example, *A. villata*, Quoy and Gaimard. *Voy. Astro-
labe*, Zooph., p. 49, figs. 1, 2. Tonga Islands.

9. *Actinodendron*, Quoy and Gaimard. Species having
very long arborescent tentacula disposed in one or two
series on the oral disk.

1, 2. This animal is more than a foot in height, and
secretes a stinging mucus.

11. *Thalassoctis*, Leuckart. One species only known,
the *T. aster*, an inhabitant of the Red Sea, figured in the
plates to Ruppell's *Voyage.* Its tentacula are numerous,
short, and pinnate. It is probably identical with the
*Epilasma* of Ehrenberg.

11. *Heteractis*, Ehrenberg. The tentacula are of
two sorts, some simple and others pinnate.


12. *Megalocita*, Ehrenberg, founded on an animal from
the same locality with the last, and characterized by
having all the tentacula arborescent, but the internal ones
are the larger and more pinnate, and have their ex-
remities hollowed into a sort of socket.

Example, *Megalocita Hemprichii.*

Family III. Zoanthide.

The genera of this family are few, and the animals
included in them have by some been mistaken for
Alcyonias.
The following revision of M. de Blainville’s table of
Stony Zoophytes exhibits the number and relations of
genera of the Madreporidae.

<table>
<thead>
<tr>
<th>Cyclolites</th>
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<tr>
<td>Lithactinia</td>
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<td>Fungia</td>
<td>Antiphylla</td>
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<td>Diplodentia</td>
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**Tribe I. Madrephylax**

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**Tribe II. Madrepora**

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<td>Coscinopora</td>
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<td>Geminopora</td>
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<td>Chaetietes</td>
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**For figures and descriptions of the more remarkable of these genera, see Astrea, Madrephylax, and Madrepaura.**

Fossil Zoantharia. Until lately it was supposed that no traces of pre-existing species of the soft Zoophytes existed; and indeed the structure of the Actinidea rendered it improbable that any such should be found. Professor Bailey however has described, in the "Boston Journal of Natural History" (1843), some microscopic fossils, which he considers as analogous to the spicule which are found in the epidermis of certain American species of Actinidea. Fossils of the family *Milleporidae* are very abundant, and among the most important of organic remains, considered in a geological point of view. In Mr. Morris’s Catalogue of British Fossils (1843), nearly 150 species are enumerated as described remains in British strata. Of these by far the greater part are derived from the oldest rocks, and are among the strongest evidences we have of a universal warm climate during the earlier epochs of the world’s history.

ZOBEI, BENJAMIN, the inventor of marmotinto, was born in 1762, at Memmingen in Bavaria. He received his education at the government school of that city, and acquired the rudiments of drawing from one of the monks belonging to the convent of Otterbeurn. In 1781 he went to Amsterdam, where he resided for two years, occupying himself chiefly in portrait-painting. In 1783 he came to London, where he formed acquaintance with Morland and Schweickhardt, the latter of whom was employed at Windsor Castle by George III. ’s “table-decker.” It was then the custom to ornament the royal dinner-table by having a silver plateau extending along the centre, on which were set various costly dishes, or milled board, in the design of fruits, flowers, arabesque-work, &c. For this an artist of considerable talent and of great freedom of hand was required. On the retirement of Schweickhardt, Zobel was appointed; and he continued to fill the office for a considerable period. Ornamenting the royal table in the manner just described was a daily occupation, the sand not being cemented by any substance. From this occupation arose the idea in the mind of Zobel of producing a finished and permanent picture, by the use of some substance by which the sands might be fixed. After various experiments, a composition (in which gum-arabic and spirits of wine formed the chief ingredients) was found to answer the best. The subject of the picture having been designed either on a pannel or milled board, a film of the glutinous substance was spread over it; the different coloured sands were then used in a similar manner as that employed in deck ing the royal table, viz. by stirring them from a piece of card held at various elevations, according to the strength or softness of the film. Thus in this way a finished picture, not subject to decay, and perfectly permanent in all its parts, and this was called by the inventor, Marmotinto. Some of the best specimens of this peculiar art were formerly in the possession of the late Duke of York, but were sold, at his death, at Ouida. Some are still among the collections of paintings belonging to the Duke of Northumberland and Sir Willoughby Gordon.

Painting on gold and silver grounds in transparent colours for the representation of cabinets of humming-birds, &c. was also practised with eminent success by Zobel. He died in 1831.

ZODIAC (in Greek Ἐτηκος, zōdaios, ’the Zodiac circle’) is a name given to a zone of the visible heavens, extending in breadth to certain equators on the sides of a great circle of the celestial sphere, in the plane of the earth’s orbit produced. This circle, with which the apparent annual path of the sun coincides, is called the ecliptic; at present it makes with the plane of the earth’s equator an angle equal to about 23° 27′ 33″, and is divided into twelve equal parts, called signs, which receive their denominations from those of the figures intended to designate the constellations or groups of stars about it. Most of the figures being those of animals, the name of zodiac (from ἔτηκος, zōdaios, the diminutive of λέγω, zων, ‘an animal’) has, in consequence, been applied to the zone.

The planes of the orbits of all the planets, when produced to the celestial sphere, are supposed to be comprehended within the breadth of the zodiac, and that breadth is determined by two small circles parallel to the plane of the ecliptic. Before the discovery of the planets Ceres, Pallas, Juno, and Vesta, the greatest inclination of the orbit of a planet to the ecliptic was scarcely exceeded 3 degrees, and therefore the breadth of the zodiacal zone was imagined to be about 16 degrees, or 8 degrees on each side northward and southward of the ecliptic. The orbit of Pallas (that which deviates most from the ecliptic) is inclined about 35°, and it now becomes evident that the breadth of the zodiacal zone is about 70 degrees.

The line in which the plane of the ecliptic intersects the plane of the terrestrial equator, being produced indefinitely, cuts the celestial sphere in two points diametrically opposite to each other; and one of these meeting the heavens, in the age of the earliest Greek astronomy, near certain stars forming a constellation to which the figure of a ram (Aries) was assigned, is generally called the first point of Aries. From this point are reckoned, on the ecliptic, the longitudes of celestial bodies; and on the equator, their
right ascensions. The twelve equal parts or signs into which the ecliptic is divided are distinguished by the names of the constellations which, in the age above alluded to, fell within their respective extents in longitude; and the names both of the signs and constellations are as follow:—Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, and Pisces.

The distribution of all the visible stars into groups or constellations was the first step in laying the foundation of astronomical science. It must have taken place in the earliest ages of the world; and there is the highest degree of probability that the zodiacs of all nations have been derived from a common source, though in passing from one people to another it may be easily conceived that the figures would suffer changes from the vanity or caprice of individuals. Among the antients, the place of the sun in the zodiac served to regulate the seasons of the year; the representations of the figures associated with the groups of stars were almost constant ornaments of the religious edifices; and superstition assigned to the regions of space influences on the lives and characters of men depending upon the qualities of the animals or objects which distinguished the constellations in the corresponding parts of the celestial sphere.

The loss of the writings of the antient Babylonians, and the entire destruction of their edifices, have deprived the world of every monument by which light might be thrown on the state of astronomy among a people whose priests, according to Strabo, were mostly engaged in the study of the science. In fact our information respecting it consists chiefly of the notices given by Ptolemy concerning a few of their observations, and from the evidence of Diodorus Siculus states (Biblioth. Histor., ii. 30) that the Babylonians had twelve chief deities, to each of whom they assigned a month, and one of the so-called twelve animals by which he means the twelve parts of the zodiac; and from this it may be inferred that they divided the zodiac into twelve signs. Sextus Empiricus (Adversus Mathematicos, lib. 1) makes a like statement, and shows how, by means of a zodiaconic representation of the signs, a few fragments only of stones, having on them figures which may or may not have been intended as representations of those which distinguish the constellations of the zodiac, have been dug up near Bagdad; and the most remarkable of these is one having on its face a solar disk surrounded by a serpent: the figure may have designated Ophiuchus and it is possible that it may have been part of a Chaldean planisphere. The division of the zodiac into twelve signs may have been originally made for the convenience of distinguishing the portions which the sun passes through in the several months; and a division into twenty-four parts is alluded to by Geminus (Eranos in Epigr. 97) which was probably made to denote the space described by the moon by her proper motion. The latter division was used by the Egyptians, the Greeks, and by the civilized nations of Asia; and the latter is found among the Persians, Arabs, Hindoos, and Chinese: the twelve parts are called the stations or abodes of the sun because this luminous sphere is in some one of them each day.

During the invasion of Egypt by the French, in 1798, General Desaix discovered some remarkable sculptures on the ceiling of an apartment in the great temple at Denderah (the antient Tentyrna), and MM. Jollans and Desvilliers almost immediately perceived among them figures nearly similar to those which are traced on celestial globes at the present time. The whole of the astronomical figures are within the circumference of a circle about ten feet in diameter; and the apartment in which they were found is in the upper part of the building: adjoining to an apartment of equal size, which is open to the sky, is an apartment of equal size, which is open to the sky by steps in the interior.
ZOD

apparently of an astronomical character, are found in several other apartments within the same temple; and in the ceiling of its portico are figures resembling constellations, among which are those of the zodiac disposed in two inner ones near each extremity of the portico, and parallel to the longitudinal axis of the temple.

The zodiacal figures in the apartment first mentioned are disposed nearly within the breadth of an annulus formed by two circles, whose common centre is at some distance, one near the top of the portico, and the second figure which is conceived to represent Cancer is however within the space inclosed by the interior circumference of the annulus, and nearly opposite the interval between Jeминi and Leo; that interval being occupied by a human figure which is a birth hieroglyphic. The figure of Cancer is also surrounded by a hieroglyphic symbol, which, according to Visconti, seems to express a proper name.

Except the zodiacal figures, scarcely any in the ceiling resemble those which are now assigned to the constellations; and a great effort of the imagination is required to discover in what manner they may be considered as emblems of the latter. From the zodiacal figures only it has been possible to determine the dates of seven stars which form the projection employed in the execution of the work, and the epoch to which the aspect of the heavens represented by it is to be referred.

The first discoverers of this ancient monument immediately saw in the hour or declination circles, if drawn upon it, would be represented by straight lines diverging from the centre, the latter is consequently the pole of the equator; but we are indebted to M. Biot (Recherches sur l'Astronomie Egyptienne) for the very probable idea that each hour circle represents the development of the whole surface of the celestial sphere, the adi of the circle being equal to half the circumferences of the hour-circles, so that the exterior circle represents the whole of the constellation, is supposed to be placed on the radii corresponding to the circumferences of the hour-circles passing through the groups of stars to which the figures belong, and at distances from the centre of the planisphere equal to the radii of the constellations. The figures of the two poles are supposed to be placed on the radii of the two poles of the equator. The distortion produced by such a development of a spherical surface is evidently very great near the margin; but a spectator who duly instructed, on comparing the figures near the centre with the circles of the heavens, the figures of the figures from the north pole in the north pole in the centre, it is not considered to refer; and the apartment without a roof, adjoining that which contained the planisphere, is supposed to have been intended for the computation of the position of the constellations by hour.

Our knowledge of the species of projection or development just mentioned is, that in the direction of a line passing through the centre, or pole, the distance between two points corresponding to two which are diametrically opposite is that which the pole of the world must have occupied about the year 716 a.c.; and he thence concludes that the planisphere presents the state of the heavens at the latter epoch." M. Biot afterwards calculated for that epoch the positions of the principal stars, and determined their situations on a plane by the rules of the projection supposed, as above mentioned, to have been used in constructing the Egyptian monument; on comparing the map so formed with an exact copy of the planisphere, he found the stars to fall upon or near the figures to which they were presumed to belong. Thus the stars of Ursae Minor fall near the centre, precisely on the figure of an animal representing the head of a dog with a crown; those of Orion and those of Sirion on the figure of a man, apparently intended for Horus, the son of Osiris, to whom, according to Plutarch (De Iside et Osiride), Orion was consecrated.

Several indications of the intentional displacement of the figures designating the constellations. In some cases, apparently when a constellation could not be conveniently introduced in its proper place for want of room, it has been transferred to the margin in the direction of a line drawn from the centre through the true place of the constellation. In other cases a constellation appears to be removed and a hieroglyphic figure substituted for it. Thus a line drawn from the centre of the planisphere, through Taurus, leads, near the magus, to a star which probably belongs to another constella-

tion; and near it is another group, which may represent the Hyades. Again, between Ariès and Piscis, and a little above them, is an animal in a sitting posture, which is supposed to coincide with the computed position of Mars in Cassiopeia; and near the margin of the planisphere, in a line drawn through the centre and this animal, there is a human figure seated in a chair, as Cassiopeia is always represented. In a few cases some emblem of a constellation has been supposed to be replaced by a hieroglyphic figure. One of the most interesting of the constellations is a figure with a winged globe is in the direction of a line drawn from the centre through the front of Ariès in the zodiacal ring. A great figure, which is supposed to represent a monkey rising near the centre of the zodiacal planisphere in a place corresponding to a part of the heavens very near Ursæ Major, but where there are no remarkable stars; and M. Biot conjectures that the animal may be an emblem of that constellation: he conceives that it may have been intended to represent a bull bearded which is represented by a hippopotamus, and to whom Ursæ Major is assigned. That the antient Egyptians had a constellation which was designated by this name is stated by Plutarch and by Diodorus Siculius (l. 27); the latter has given translations of two inscriptions in hieroglyphics which appear to have existed in his time; and in one of these Osiris is made to say that he had been to the uninhabited parts of India, to the regions of the Bear, and to the sources of the Danube.

In the direction of a line drawn from the centre of the planisphere, towards the north, and passing through the figure of Canes, is the representation of a cow having a great star between its horns; and near it, in the direction of a line coinciding with the longitudinal axis of the temple, is a tall lotus-stem surmounted by a hawk, the symbol of deity. On this stem the place of Sirius, computed for the epoch of the planisphere, is found to fall; and the cow probably represents Isis, to whom the star Sirius was consecrated. The solstitial colure being due north and south, it is probable that the planisphere was intended to show the aspect of the heavens at the time of the vernal equinox, when the colures pass through the four cardinal points of the horizon; and it seems to be intended to show the cow being in the plane of the solstitial colure is an indication that at midsummer, at the epoch of the planisphere, Sirius rose with the stars of Canes. The line representing the direction of the equinoctial colures passes, on the south side of the figure, a little way from which is a small figure (supposed to be Harpocrates) issuing from a lotus-flower, and having above his head a star with a hieroglyphical inscription. According to Plutarch (De Iside) the Egyptians represented the rising sun by a child issuing from a lotus; and the serpent with the symbols indicate the rising of the sun in the east point of the horizon on the day of the vernal equinox.

The heads of all the figures, with scarcely an exception, face towards the centre of the figure, and the figures in the southern half of the zodiac are arranged so that to a spectator standing in the centre of the room with his face to the south, and looking upwards, they must have
apparition as if moving from east to west; that is in the direction of the apparent diurnal motion of the heavens.

The longer axis of the temple is inclined to the meridian in an angle of about 17 degrees, and the walls are directed so that the points at which the remarkable stars Sirius and Antares must have seemed to rise coincided with the directions of the north and south ends of the building.

A temple near Esne (Latopolis), in the portico of which is a representation of the zodiacal signs, is disposed so that the longitudinal walls tend to the points at which Antares and Sirius rise, though no great stress is laid upon this circumstance, there is some probability that the dispositions may have been intentional, since no reason can be assigned why, otherwise, the temple should not, like the pyramids, have had their walls directed to the cardinal points.

The temple at Denderah, near to the temple of Isis, was 365 cubits in circumference, and to each cubit was assigned one of the 365 days of the year, with the rising and settings of the stars for each day marked on the several divisions.

The ceiling of the portico belonging to the temple at Denderah is nearly covered with sculptured figures, many of which resemble those in the circular planisphere, and the twelve signs of the zodiac are distinctly represented in two bands parallel to the axis of the building: six of the figures appear to be entering the temple on the eastern side of the portico, and of these Cancer is the last; the other six are placed in such a way as to be visible on the western side, so that the front of the portico being towards the north) the direction of their motion corresponds to that of the apparent diurnal rotation. Within the two lines of figures are those which belong to the northern constellations, and beyond the southern and western extremities of the portico, are figures relating to the southern constellations.

Among the former is a human figure surrounded by seven stars. Disposed similarly to that in the temple at Denderah, near to the temple of Isis, and the zodiacal signs, it has given rise to a doubt concerning the justness of that supposition. Some persons have imagined that the figure might have been intended for the mythological saraeaus; but as in this temple, as well as in those at Esne, it has significance in this case, the search has been made for evidence, in the stars represented that it suggests the zodiacal sign; and, that, according to the hypothesis of Biot, the displacement was in order to make room for some emblem. In fact, the place of Cancer is, in the portico, occupied by a head of Ibis, which is plumed in the solar rays; and, since Sirius was consecrated to Ibis, it is reasonable to suppose that the emblem was intended to express that, at the epoch of the planispheres, the star Sirius rose heliacally. By calculation it is ascertained that about 75 years before Christ, the longitude of Denderah, Sirius rose with the stars of Cancer, when the sun was in that constellation, that is, at the summer solstice.

The two temples at Esne have, in the ceilings of their porticos, representations of the twelve zodiacal constellations in two lines parallel to the axis of the buildings. In the smaller temple six of the figures appear to be entering on the southern side, and six to be issuing on the northern side: the front of the portico being towards the east, the direction of the movement corresponds with that of the diurnal rotation, as in the temple at Denderah; but there is this difference in the division of the figures, that, at Esne, Leo is the last to enter, and Virgo the first to quit the temple. M. Biot endeavours to account for this difference by the different inclinations which the axes of the two temples have to the meridian; the axis of the temple at Denderah deviating 17 degrees, and that of the small temple at Esne 71 degrees, both of them being from the north towards the east. He observes that, in the former temple, a meridian line passing through the centre of the circular planisphere cuts the zodiacal band in Cancer towards the north, and in Capricorn towards the south; thus dividing the twelve figures so that the one star are on the western side constitute all those which at a certain hour are descending towards the west, and the other six, which are on the eastern side are ascending towards the meridian. At the head of this descending series lies Aquarius, which is passing the upper meridian; the distribution of the signs from that point is the same as those in the zodiac of the portico. A like correspondence would be found to exist in both the temples at Esne, if a single planisphere were supposed to be placed in the risen of each, with the lotus-stem in the longitudinal axis, the zodiac is formed, and the planisphere were cut so as to divide the figures into such as ascend and such as descend.

That there were among the ancient Egyptians a number of fields in the spring; that at the average month since the planisphere described by Scaliger, in his "Raccolte," contained, among other animals have a correspondence in form or situation with those which have been mentioned, the figure of a man holding a scythe, that of a ram, and that of a bull, are to be found in the planisphere of the temple at Denderah, near to the temple of Isis; and those on the north side of the temple, or in the roof of the temple, which is placed in the tomb of that ancient king at Thebes, was 365 cubits in circumference, and to each cubit was assigned one of the 365 days of the year, with the rising and settings of the stars for each day marked on the several divisions.

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he constellation Cancer; and observing that Cancer is the last of the figures which appear to enter the portico of that temple, while in the zodiaca at Esna the lion is the last which enters, he conceives that the latter circumstance is an indication of the sun being in Leo when Sirius rose heliacally. Supposing further that the epochs of the zodiaca at Denderah and Esna are such as the positions of the sun denote, he determines, by a computation founded on the progressive displacement of the point of the heliacal rising, that the interval between them is 1300 years, the sculptures E For the priests change of the zodiaca, the latter must otherwise be considered as overthrown by the calculations of MM. Ideler and Biot, who have determined the longitudes of the sun at the terminations of three or four annal or regular periods of 1400 years, within which the ecliptic of Sirus return to the time of the summer solstice; and have found that between the year 2782 B.C., and 1300 B.C. the sun was in the constellation Leo and in the sign Cancer at all the three epochs. M. Biot concludes that the sun had passed from one constellation to the next in the interval between the epochs to which they are supposed to refer.

In the temple at Denderah, according to Dr. Young, Leo may have been the manner in which the Chaldean zodiaca, or the sign preceding that in which the sun was on the first day of the anuus vagon (year of 365 days); and in this supposition it would follow, from the known rate at which the place occupied by the sun in the ecliptic at the commence ment of its zodiacal season, that the fact that the year of 365 days began on the day of the solsticial epoch in the year 1300 B.C., that the epoch of the plane sphere is between 11 B.C. and 108 B.C., or in an age earlier by 1500 years. If Virgo were the leading sign, as is supposed to be in the temple at Esna, the epoch of the zodiac would be the year 900 B.C., or 1500 years earlier.

It has been ascertained by MM. Champollion and Rossellone, from the Greek inscriptions on the temples of Denderah and Esna, and in later edifices discovered in the same region, that the Egyptians continued to build temples, which they consecrated to their deities, with decorations similar to those which were executed in more antient times, it may be presumed that the present sculptured zodiacs are copies of those which were employed in the days of the emperors, that through they determine nothing respecting the time of the construction of the temples, they may still serve as indications of the manner in which the heavens were represented in the East in the infancy of astronomical science. The sphere which contains the interior of the temple at Denderah was brought to France in 1821.

The country from whence the Greeks derived the figures of the constellations is not with certainty known; so that all the extra-zodiacal signs in their descriptions of the heavens did not, from the first, receive their designations from subjects connected with the Greek mythology is evident, since in the notices given by the earliest writers on astronomy two of them, the distances of Halcyon and Cygnus, have the general names by πανον, a knoiling figure, and Ὑποκ, a bird; and that some of the figures were borrowed from the Chaldeans is probable, since in the time of Herodotus it was supposed that the constellation of the Pleiades arose from the Egyptian, the knowledge of the polus (στελη), the gnomon or style, and the division of the day into twelve parts. (Herod. ii. c. 109.) It may be imagined that, from the intercourse between the Egyptians and Greeks in very early times, they gave the same names to the signs of the zodiacs; and it follows, that those must have been introduced by the Greeks, or at least that the latter people substituted them for corresponding figures in the Egyptian sphere. It may be remarked however, that in the oldest descriptions of the Greek zodiac, χελωνης, the scorpion and the crab, make one constellation; whereas in the Egyptian zodiac the corresponding part of the heavens is divided between the scorpion and the balance, the latter occupying the place of the crabs. Now, in a work on the constellations, ascribed to Eratosthenes, who lived in the time of Ptolemy Euergetes, it is stated that the great length of the constellation Aquarius caused astronomers to divide it into two parts; and in a poem attributed to a certain Manetho, supposed to be the priest of that name, and dedicated to one of the Ptolemies, it is expressly stated that 'the claws of scorpio were given to Menes, the last Pharaoh of the eleventh dynasty; whereas the Egyptians, on or before the time of the great antiquity of the sign it may be observed that, in that shape, the Chaldean designation, signifying a balance the constellation called by the Greeks χαλκος; it may be however, that he alluded then to the Chaldeans of his own time.

The designations which are given to the constellations in the writings of the Greeks apparently indicate persons or objects connected with the Argonautic expedition; and it is reasonable to suppose that, about the epoch of that expedition, the Greeks, having acquired a knowledge of the Chaldean zodiaca, supposed that the figures represented the visible heavens, transformed such of the figures as they did not reject into others having relation to the actions of their own heroes. On this hypothesis it has been assumed that Arius represents the ram whose horns were tied to the head of the bull or bulls which were tamed by Jason; Gemini, Castor and Pollux, and so on. The ship, among the southern constellations, is supposed to be the Argo; and Ursa Major, the nymph Callisto. The history of Perseus has been employed by Chiron, Andromeda, Cepheus, Cassiopeia, and Cetus; and the labours of Heracles, by Draco, Leo, and the constellation bearing the name of that hero. Newton, in his 'Chronology,' appears however to assume too much when he considers that this zeon, when he built the Argonautic expedition, the stars of the constellations, supposed Arius, Cancer, Libra, and Capricornus so that the equinoctial and solstitial colures passed through their middle points; the precise determination of these parts was beyond the science of the Greeks long subsequently to the age of Chiron.

Hesiod mentions (Opera et Dies) the Pleiades, Arcturus, and Orion, stating that land should be ploughed at the heliacal setting, and corn reaped at the heliacal rising of the Pleiades (about the 20th of April), and that corn should be threshed at the rising of Orion, and vines pruned when Arcturus rises in the evening. Homer also mentions the Pleiades, Hyades, the Bear or Wagon, and Orion in the description of the shield of Achilles (II. xviii. 497); it is evident therefore that already in the time of Homer those constellations were introduced and ranked (that is to say, in the 7th or 8th century B.C.,) and that the name of that constellation on the poem of Aratus: planispheres, he observes, are constructed for men's use, and therefore the names on them are traced just as they appear in the heavens to the view of the spectator.

In the work of Autolycus, entitled 'On Rises and Settings' of the Stars (Περὶ Ἑντολῶν καὶ Διστολῶν), and in the 'Phaenomena' (Φανοματα) of Euclid, the signs of the zodiac are mentioned, and the parts into which that band of the heavens was divided are called dodacemotories, or twelve disciples; but it is evident that the most complete knowledge of the celestial sphere of the Greeks is to be obtained. This writer lived about 270 years before the Christian era, and his poem is a paraphrase of two works which were composed by Eudoxus of Cnidus, who lived 100 years previously, that is, in the age of Autolycus and Euclid.

In describing the constellations, Aratus begins with those immediately about the north pole of the equator, and proceeds from there (that is, near) the north pole, in the directions of the declination or hour-circles of the sphere.
He mentions Ursæ Major and Ursæ Minor, observing that they are placed so that the tail of one corresponds to the shoulder of the other, and he adds that the constellation Draco winds between them. Near the head of Draco he places the figure of a man, who is said to be on his knees (Heracles, his usual attitude, has since been changed, and) behind him the northern crown. Near the kneeling figure is Ophiuchus, the serpent-carrier, and under the latter are the great claws (of Scorpio). Behind Ursæ Major is Cepheus (Boötes), with stars below his girdle, and under his feet is the constellation Virgo. Near the head of Ursæ Major are Gemini (Διήπεδος); under his body is Cancer, and under his feet Leo. Auriga and the star Capella are said to be on the left of Gemini, opposed to them being the right hand of Auriga and horns of Taurus, whose head is indicated by a cluster of stars (the Hyades). Cepheus is behind Ursæ Minor, and near him is Cassiopeia, the stars of which are said to be arranged in the form of a key: Cassiopeia has her hands raised above her head as if bewailing the fate of her daughter Andromeda, who is placed below her. The arms of the latter are extended and chained (to a rock); and under her head is Pegasus. Ariës is below the girdle of Andromeda, and as well as the claws of Scorpio and the girdle of Taurus, is in the equator and is above Ariës. The constellation Pisces is below the triangle; and Perseus stands with his hand near the chair of Cassiopeia. Below his left knee are the Pleiades, and the nine stars of the daughter of Atalanta are given to the stars of the cluster. Antares is near the head of Perseus, and six stars in the cluster; but Hipparchus, in his commentary on the poem, states that against a dark sky seven may be seen. The Bow of Sagittarius tends towards the tail of Scorpio, and the point of which carries the sign of the zodiac, which is represented by a girdle between Perseus and the head of the bird (Σετλαν). This is the constellation Cygnus, which also by Manetho and Ptolemy is called the Bird. The name (Cygnus is first applied to) a work on the constellations which is ascribed to Claudius Ptolemy. Cygnus extends towards the other eagle (Aquila), and near the head of Pegase is the right hand of Aquarius, which, it is remarked, rises before Capricornus. Over the latter is the Dolphin. All the above constellations are stated to be between the zodiac and the equator, six are given as the girdle of the ship Argo, and afterwards mentioned in order, beginning with Cancer and ending with Gemini. Libra (elsewhere called Στεφνα) is not mentioned, while Scorpio and the Claws are described as if they formed two constellations.

A description of the constellations between the zodiac and the south pole, it is stated that Orion is placed obliquely to Taurus, and that Canis Major is at his feet. Under him is said to be Lepus, and at the tail of the dog. The head of the ship Argo is in Pisces, and above the river (Eridanus), Cetus advances towards Andromeda, and below Capricornus is the Southern Fish. Under Sagittarius is a circle of stars (the Southern Crown), and below the sting of Scorpio is the A. Under the Scorpion is Centaurus, while farther on is Hydra, having its head under Cancer, and its tail above Centaurus; and the middle of its body is Crabes, and near the tail is Corvus. The bright star Procyon is under Gemini.

Such, nearly, is the description given by Aratus of the celestial sphere, and the constellations are, in general, the same as those which are represented on the modern globes: some inconsistencies which exist in it were pointed out by Hipparchus, who lived about 100 years before Christ, and who corrected the figures of the sphere. Very plain that the descriptions have been compiled from observations made by persons at different places, and probably in different ages; for in one part of the work it is stated that the extremity of Ophiuchus is in the tropic of Capricorn, and in the other it is the girdle of Cepheus. It touches the horizon; while in a third the three girdles of Boetes are to go below that circle, except his hand; and these circumstances are quite in conflict with observations made in the same latitude. It should be remarked that, in the Generation of the world as represented in the mosaics of the ruins of the Temple of Artemis, and in the relief of a table of the Zoroaster) that the ancient Persians divided the zodiac into twenty-eight constellations, or houses of the zodiac, and also into twelve signs: to these last are assigned the names which correspond to those at present given; and the constellations in that region of the heavens which is described as that
The division of the zodiac into twenty-eight lunar mansions prevailed also among the Arabian astronomers in or before the ninth century. It is mentioned by Alfragan, who states (Elementa Astron., A.D. 50) that the first was called Xartan, and that it contained the three principal stars in Aries.

The Hindu zodiac consists of twelve constellations, the same as the Philosophsic Transactions' for 1772, consists of twelve figures disposed on the four sides of a square. In this the place of Gemini is occupied by a figure of a man apparently with a ram's head, the bull, the ram, and the lion are represented by figures which are frequently placed in the普通的 plate presents Aquarius; and for Pisces, one fish only is delineated. The figure in the place of Scorpio cannot be made out. This remarkable monument was discovered in the ceiling of a church or pagoda at Verdapotthia, in Madura; and the separation of the figures in Capricorn seems to indicate that it is of great antiquity, as it may be reasonably supposed that such a disposition preceded in time of that of a union of the two bodies in one.

In the second volume of the Asiatic Researches there is a description from the Sanscrit of Sirjelti, of an antient zodiac, which is divided into twelve parts, each of 30 degrees, corresponding to the modern signs. The ram, the bull, the fish, the zodiac signs may be clearly seen, and those of those animals, and in the plate which accompanies the memoir the entire figure of the bull is given: the twins consist of a male and a female figure, and in the description, the woman is said to play on a musical instrument, while the man is shown chasing her, and that they are not so represented in the plate. Virgo is represented by a woman in a boat: in one hand she holds a lamp, and in the other a blade of corn. Libra is represented by scales, which are held by a man who appears to be placing a weight in one of the pans; and the pans may be considered as those of a horse. Capricornus is the figure of a gazelle. Aquarius is represented by a man pouring water from a vessel which he carries on his shoulders; and lastly, Pisces, the figure of two fishers, one being turned towards the tail of the other. The zodiac is also divided into twenty-seven parts, constituting the mansions of the moon: these are not represented in the plate, but their names, as well as those of the twelve signs, are given.

The age in which Sirjelti lived is unknown.

The zodiacs of India and of antient Persia may be presumed to have been originally the same as that of the Greeks or Egyptians; for although all of them differ from one another in the details, the points of coincidence are too great to be accidental, and the course of the time the primitive sphere was altered in the countries eastward of Egypt and Chaldea, as it was by the people of Europe. On the subject of the Indian zodiac the reader may consult Bohlen, 'Das Alte Indien,' vol. ii., p. 232, &c., and the references in the notes.

The representations of the heavens which have been found among the people of northern India, China, and Japan correspond to those which were in use in the western part of Asia, and the zodiac being divided into twelve parts, which are called mansions of the sun, and also into twenty-eight parts; but, according to the accounts of the Jesuit missionaries, the Chinese at one time gave to these the names of the seven planets, each of which was repeated four times. Thereafter, the names of the twelve signs frequently made of machines exhibiting the apparent movements of the heavens; and Père Mailia has given a plate representing a sphere which is supposed, though without sufficient reason, to have been executed about the year 1300. But, if the Chinese were, at a time long subsequent to the commencement of the Christian era, instructed in astronomy by a people from the west; and it is therefore probable that they then were a long time the lowest of the Persians and Arabs in the division of the zodiac.

A table of the twenty-eight constellations into which the Chinese have divided the zodiac, with their names and the extent which each occupies, is given in Delambre's Histoire des sciences, i. p. 369, from the work of Père Souciet entitled 'Observations Mathematiques, Astronomiques,' &c. 1729; and it is stated that the first, which is named Pi, commenced, in 1683, with the fourth degree of Aries. Delambre has also given a table of the twelve constellations; and from the records of the eclipses which the Chinese have observed, it is evident that the place of the sun has always been referred by them to the sign of the zodiac which he occupied; and period they made their year commence when the sun is near the winter solstice, and they designated that part of the zodiacal resurrection the spring, or of the sun in the bull, the scorpion, the serpent, the horse, the sheep, the ape, the hen, the dog, and the hog are names supposed to be given, both in China and Japan, to the zodiacal signs; but it is more probable that they are applied to the twelve years of a person's life, according to the time which the sun requires to change five hours into which, in those countries, the day is divided.

The extra-zodiacal stars are distributed in constellations, which are distinguished in general by the names of the emperor and his ministers or courtiers; but that which in Europe is designated Ursae Major is represented by a vessel for measuring corn; the four stars of the quadrilateral figure forming the body and the others the handle. But relates, from information communicated by M. Remusat, that in the Chinese sphere the constellation which corresponded to Orion is designated by a name signifying a conqueror.

That a few coincidences should exist among the names given by different people to the groups of stars in the heavens is supported by the fact that the people borrowed from one another; it may therefore be considered as purely accidental that the Iroquois called the stars of Ursae Major by a name which in their language signifies a bear (Lafitteau, Moeurs des Amér. sauvages, p. 20), and that they have been connected with the stars of the same name, if not separated, by the former should have executed sculptured representations of their calendar, and placed them as ornamental objects in their religious edifices. It has been ascertained that the Toltecs and Aztecs made the year consist of eighteen months of twenty days each, to which they added five complementary days, introducing a period of thirteen days at the end of fifty-two years in order to complete the cycle; and this division of the year is represented in a chronological table executed by the latter people (Carreri, Giro del Mondo.) Among the ruins of Palenke have been found sculptured figures of serpents, which have been thought to indicate the existence of the Ophtie worship in that part of the country, the seat of the Toltecs; and at Tula, the seat of the Aztecs, there is a monument supposed to be a planisphere, on which are eighteen compartments representing months, which are disposed three together in the interior of a ring ornamented with hieroglyphic figures. In 1790 there was discovered in the city of Mexico, among the foundations of the temple of Mexitli, a block of porphyry, on which are described symbolical figures, apparently constituting a planisphere or a chronological table, in which the several days of the year are distinguished by particular names and objects, and a few of them are stated to correspond nearly to the signs on the Chinese planispheres. M. de Humboldt remarks (Researches, &c.) that the name of the first day is also the name of water, and that the symbol of the day resembling more closely that of Aquarius in the Greek and Egyptian zodiacs.

ZODIAL LIGHT, a luminous appearance seen at certain times after sunrise and before sunset, from which it is inferred that there is a slight disturbance of the air, arising from the denser parts of that medium which (Comet) is more than conjectured to occupy the spaces in which the bodies of our system move.

A few months ago, when the comet of this year (March, 1843) was visible in lower latitudes, its tail only appearing (except for a very short time) above the horizon in England, some persons contended that this tail was only the zodiacal light. This produced a letter from John F. H. H. Stewart, in which a description of that light was given. We have before expressed
our opinion that celestial phenomena should be described in the words of those who are observers themselves. We therefore subjoin the following extract from the letter in question:—'The zodiacal light, as its name imports, invariably appears in the zodiac, or, to speak more precisely, in the plane of the sun's equator, which is 7° inclined to the zodiac, and which plane has an angle of 1° 25' from the sun, intersected by the ecliptic in longitude 28° and 258°, or so much in advance of the equinoctial points. In consequence it is seen to the best advantage at, or a little after, the equinoxes, after sunset at the spring, and before sunrise at the autumnal equinox, being visible only because the line of its apparent axis lies at those times more nearly perpendicular to the horizon, but also because at those epochs we are approaching the situation when it is seen most completely in spring.'

At the vernal equinox the appearance of the zodiacal light is that of a pretty broad pyramidal, or rather lenticular, body of light, which begins to be visible as soon as the twilight decays. It is very bright at its lower or broader part near the horizon, and (if there be broken clouds about) often appears like the glow of a distant conflagration, or of the rising moon, only less red; giving rise, in short, to amorphous masses of light, such as have been noticed by one of your correspondents as possibly appertaining to the comet. At higher latitudes its lighter and broader, and it is more clearly traceable much beyond the Pleiades, which it usually however attains and involves; and (what is most to my present purpose) its axis at the vernal equinox is always inclined (to the northward of the plane of the ecliptic) at an angle of 1° 25' below the horizon; and it is most luminous at its base, resting on the horizon, where also it is broadest, occupying, in fact, an angular breadth of somewhere about 10° or 12° in ordinary clear weather.'

ZOEÁ. [BRANCHODOPA. p. 339.]

ZOEÁ, GEORG, was the eldest of the three sons of a Lutheran clergyman of Jutland, said to have been of Italian name, but who was born at Roskilde, December, 1736, at the village of Dahlen in the county of Schackenburg and the diocese of Ribe, where his father was then minister, although he soon after removed to the parish of Møgel-tonder, near the town of Tonder in the same county. After having been carefully educated at home, under the eye of his father, Zoega was sent, in 1772, to the gymnasium of Altona, whence the next year he proceeded to the university of Göttingen. On finishing his academic course, in 1776, he set out on a tour through Germany and Switzerland, which he was eventually led to extend to Italy, and he did not return to his native country till he had visited both Venice and Rome. He then passed a winter at the university of Leipzig; after returning home from travel spent some time in the office of a brother of his father, who had a seat under the government at Copenhagen; but at last, in October, 1778, he accepted the situation of a family tutor in the little town of Kierte-minde, on the eastern coast of the island of Fünen. After a few months however he was offered the appointment of travelling tutor to a young gentleman who proposed to make the tour of Germany, Italy, France, and England; this scheme exactly suited the taste of Zoega, who was already devoted to the study of the fine arts. After a year's residence with his pupil at Copenhagen, where he eventually conceived an intimacy with his old professor Heyne, with whom he had been always a favourite, they set out together in March, 1780, and after having visited Cassel and Frankfort, and traversed Hesse, the Palatinate, Suabia, and Bavaria, went down via Cologne to Venice, where he concluded the study of art, and Carinthia to Venice, whence they proceeded through Lombardy and Tuscany to Rome, and from Rome to Naples. Returning to Rome, they spent two months more in that city; and then, in May, 1781, were about to take the departure thence for the Campania; but the king of France, on an unexpected death suddenly recalled them to Denmark. Soon after his return home Zoega was introduced to the Danish minister Guildborg, who, struck with his mellow voice, proposed to make him to take the charge of the king in Germany and Italy. Upon this enterprise he set out in April, 1782; and after spending six months in the Imperial Museum at Vienna, he arrived once more at Rome, in January, 1783. From this date Italy, and chiefly Rome, continued, with the exception of a short visit which he made to Paris in 1784, to be the residence of Zoega to the end of his life. The sudden death of the patron Guildborg, the news of which reached him, was at Paris, in May, 1784, reduced him for a time to great straits; and his difficulties were made the more serious by his having some time before both disobedience and desertion of a young Italian, named Pietruchini, a most beautiful but penniless daughter of a painter, and became convert to popery. He had however on the introduction of the Austrian papal nuncio Garumph, whose acquaintance he had made at Vienna, been received with distinguished favour. Favour was particularly obtained for him at the Propaganda College, afterwards cardinals; and he was through Borgias's interest, received from the pope the appointment of interpreter of modern languages to the Propaganda College. He now prolonged the preparation of a critical catalogue of the series of Egyptian coins issued by the Roman emperors, mostly as contained in the old museum of Borgia at Vellutari, which was last published in 1795. At Rome, in 1797, with the title of Numer Zuœ Georgen Imperatoris probatissimi in Museo Burgiano selua spectantes quotquot religios usus classica ad varia musae atque libris colligere obtiti. This attracted great attention, and soon made the name of Zoega known throughout Europe. It was followed by another work on the numismatics of the money of Rome, celebrated by the desire of Pope Pius VII., and the printing of which, he had been going on for five years, was at last completed in 1797. But after the labours and anxieties of so many years, which pressed the more heavily upon Zoega as he was by nature a most active and restless man, his health was much better than 10° to 70° below the horizon; and it is most luminous at its base, resting on the horizon, where also it is broadest, occupying, in fact, an angular breadth of somewhere about 10° or 12° in ordinary clear weather.'
a have amounted to 900 crowns; but then it was paid in 
sterling, and the Danish paper-money at this time, and still 
more at a later date, was much depreciated. Zoëga's next 
work was a catalogue of the Copic MSS, in the library of 
archbishop Borgia: 'Catalogus Codicum Copicorum in 
manuscriptu quin Musaeo Regiorum Valiae adscriptis: 
uctore Georgio Zoëga. Dano, Equite Aurato ordinis Dano-
rigoci, f., Romae, Typis Sacrae Congregationis de Pro-
agudae Fide.' The whole of this work, with the excep-
tion only of three pages, is original, and was printed in 1633, 
at the request of Cardinal Borgia, who took possession 
that Lyon in the end of 1604, and the embarrassment into 
which Zoëga was thrown by that event, which involved 
im in a lawsuit with the heirs of the cardinal and the producer, 
the whole of which is stated in notice of Zoëga, by 
father, but it was not published. We have reason to 
believ that Zoëga died in 1810, after his decease, when the case was 
decided in favour of his children. Meanwhile he had commenced, in 
conjunction with Piranesi and the engraver Piroli, an 
catalogue of the plates in the Museo Aurelianum at 
Rome, the first 4to. volume of which, published 
in numbers, was completed in May, 1508; a 
second volume was carried on for some numbers by Zoëga, 
without the assistance of Piranesi, but was left unfinished 
by his death. Zoëga wrote an account of his travels, in 
1781-1812, by F. G. Wecker, then professor of 
Greek in the university there, with the title of 'Die 
Antiken bas-reliefe von Rom. In den originalpapierschatzen von 
Thomas Piroli in Rom, mit den Erklärungen von Georg Zoëga, 
verfaßt, als Zoëga's Notice of his death, received in 
the Biographie Universelle, vol. lii., 
1784-1808, from which, and from his works, the facts in the 
recording abstract have been taken. The work on 'Egyptian 
Antiquities' in the 'Library of Entering Knowl-
dge' for 1808, published by 
Orellans and his labours on the hieroglyphics. Besides 
his exact and extensive learning in every branch of archae-
ology, including Egyptian as well as Greek and Roman 
antiquities, Zoëga is held in the highest esteem for his 
accurate and impartial judgment. In his writings, and in 
his speeches, he was distinguished for the truth with 
which he had seized the spirit of antient art. 

ZOFVANNY, JOHANN, R.A., a very distinguished 
sculptor of the latter part of the eighteenth century. He 
as by descent a Bohemian, but his father, who was an 
archbishop of Rome, settled in England. He was born, 
according to Firillo, at Regensburg in Bavaria, or, 
according to another account, at Frankfort on the Main, 
in 1753: the latter probably is the correct account. Young 
offany was sent early by his father to Italy, where he 
studied sculpture. In defence of the work which he returned to Germany— 
passing some time as an historical and portrait painter at 
oblenz on the Rhine, from which place he came to England 
seven years before the foundation of the Royal Academy, 
he was elected one of its first members, in 1768. In 
character he was probably a warm-hearted man, attracted 
to him, and his first pictures which attracted notice 
London were a portrait of the Earl of Barrymore and 
three theatrical portraits. He painted Garneck in Sir John 
ate, and as Abel Dragger in Boswell's 'Alcy-
ony.' Footes, in the 'Mayor of Carrell,
ston and Foote in Dr. Last; and Garrick in 
the Farmer's Return,' in which the character and drawing 
are very good; the colouring is less successful. 

For his work on 'Am Phraem.' 1, XV., 
large canvas, to the number of ten portraits, which has been 
scraped a mezzotinto by Earlon. He painted likewise two 
separate portraits of George III. and his queen, which were 
engraved in mezzotinto by Houston. Shortly after this 
time he revisited Italy, and took a recommendation from 
George III. to the Grand-Duke of Tuscany at Florence, 
where he painted an interior view of the Florentine picture-
gallery, which was purchased by George III. In 1774 he 
wanted a clever picture of the 'Lute-school' of the Royal 
Academy. In 1781 and 1782 Zoëffy went to the East Indies, 
and lived some years at Lucknow, where he met with the 
greatest success, and he painted three of his best works 
there, all of which have been well engraved in mezzotinto 
by Earlon. One is the Embarkation of Hyderbac to Cal-
cutta, who was sent by the Vizier of Oude to Lord Corn-
wallis; he went with a numerous retinue by Patna to 
Calcutta: the picture is a rich display of Indian costume, 
and contains, besides 180 figures, several elephants and 
horses; the scene is placed in India. The others are an 
Indian Tiger-Hunt; and, as a companion to the Emb-
assy, a Cock-fight, at which there are many spectators. 

Zoëffy returned to London, about 1796, with a large 
stock of pictures, and died at Earlon in 1806. (Firillo, Geschichte der Malerheilk, &c.; Pilkington 
Dictionary of Painters.) 

ZOILUS (Ζωίλος), a Greek rhetorician and grammarian, 
is called by some a native of Ephesus (Scholast of Hom. 
Homer., v. 7), though he was not domiciled there, but 
as a youth of about 360. Vitruvius ('Prost., lib. vii.,) on the 
another hand, makes him a contemporary of Ploemey Phil-
adelphus, n. c. 293-247. Suidas (v. ων τονεπηαδος) states 
that Anaximenes of Lampacus was a pupil of Zoilus, 
and Philodamus, and had written a work on dialectics, 
which was prescribed by the law of Macedonia after 
the time of Alexander the Great. These different 
statements of the age at which Zoilus lived do not allow 
us to draw any more definite conclusion than that he must 
have lived during the period that followed the death of 
Alexander the Great. We have thus no alternative but 
to suppose that there were two persons of the name, 91 Zoilus—that was the 
name of a rhetorician who attacked Homer, and the other a 
grammarian who attacked Homer, and the other a 
rhetorician, though a careful examination of the passages 
in which Zoilus is mentioned leaves no doubt that they all 
refer to the same person. We have thus no alternative but 
to suppose that there were two persons of the name, 91 Zoilus—that was the 
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rhetorician, though a careful examination of the passages 
in which Zoilus is mentioned leaves no doubt that they all 
refer to the same person. We have thus no alternative but 
to suppose that there were two persons of the name, 91 Zoilus—that was the 
name of a rhetorician who attacked Homer, and the other a
land. His early education was conducted by his father, a distinguished and much respected lawyer; and after having for some time attended the public school of his native place, young Zollikofer was sent to the gymnasium of Frankfort on the Main and of Bremen. When he had completed his preparatory courses, he went to the university of Utrecht, where he studied chiefly theology, but devoted also much time to the study of the antients, of philosophy, and belles-lettres. Soon after his return to Switzerland, he was appointed, in 1793, pastor at Maria-Therianspol, in the Pays de Vaud, but he did not remain there long. After having successively been removed to Monstein and Isenburg, he was invited, in 1798, to the office of pastor of the Reformed (Catvinistic) congregation at Leipzig. In that place he continued until his death, on the 20th of January, 1789, although several very honourable offers were made to him. His position at Leipzig was particularly favourable, for his congregation was one of the most enlightened in Germany, and his intercourse with the distinguished professors of the university had a great influence on the development of his talent as a pulpit orator. He also exerted a very beneficial influence not only upon his congregation, but upon the young theologians of Leipzig, to whom his upright and pious conduct was a manifest example. His knowledge, though very extensive, was not always profound, and he attached a higher value to the practical part of religion than to learning and theological speculation. He taught his flock by word and example, and from both of these sources he distributed the rich harvest of his private study and reflection. His method of preaching was always calm and dignified, impressive and convincing without being rhetorical. Although his sermons were not exactly what we call popular, they were always clear and luminous, as his way of teaching went through the heart and not the head. He counteracted the prevailing prejudices and evils of the time, and endeavoured to correct the vulgar notions of morality, and to enlighten his audience in the true sense of the word. What rendered his influence as a teacher of principles so strong, was, at the time, a perfect exemplar of what he taught. As regards his doctrinal views, he did not hesitate to attack the common opinions where he thought them incompatible with reason and goodness; and, although he was not a neologist, yet he maintained several points from the committee of the Calvinistic view. The best of his sermons, amounting to about 250, were published and received with great favour, and they are still much read in Germany. Zollikofer himself published several collections of sermons, in 4to, 8vo, 1771-1793, 3 vols. 8vo, in a second in 1784, 2 vols. of which a third edition appeared in 1789. After his death a collection of unpublished sermons was edited by F. von Blumenbach, Leipzig, 1798, 15 vols. 8vo, from which two more volumes were added by J. G. Marezoll, Leipzig, 1804, 8vo. About the same time there appeared a complete collection of all Zollikofer's sermons, in 15 vols. 8vo, Leipzig, 1789-1804. Besides these sermons, he published: 12 sermons, books to the Reformed Churches (Leipzig, 1766, 8vo), some of the hymns are of his own composition, and the great popularity of them is manifest from an eighth edition being published in 1789, 8vo. 2. "Abhandlung über die Erziehung," Leipzig, 1783, 8vo. 3. "Anreden und Gedichte zum Gebrauch bei dem gemeinschaftlichen und auch dem hüttenischen Gottesdienste," Leipzig, 1777, 8vo, reprinted in 1783. 4. "Anrathuisungen und Gebote zum Privatgebrauch für nachdenkende und gutesgeseunte Christen," Leipzig, 1785, 2 vols. 8vo. A fourth volume appeared in 1790, 2 vols. 1792 and 1793, and a new edition of the two last volumes in 1802, &c. Zollikofer also translated several works from the French and English, with which languages he was thoroughly conversant. For the English he translated P. B. Crolius' "Traite," 3 vols. in parts, and have a third edition appeared at Leipzig in 1783. Zollikofer's sermons were translated into English by William Cooke, 10 vols. 8vo. (Cf. to Zom," Uber den Character Zollikofers," Leipzig, 1798, 8vo.; "Jürgens, Lexikon Deutscher Dichter" und "Prosaisten," pp. 603-690.)

ZOMBOR, an imperial free town, in the county of Baez in Hungary, is situated in 45° 49' N. lat. and 15° 12' E. long.; at a distance of 2 miles from the Danube, and 23 miles from Maria-Therianspol, in a plain on the banks of the Francis Canal. It contains 3500 houses (most of them low and covered with thatch), and 22,000 inhabitants, of whom about 12,000 are schismatic Greeks and the remainder Roman Catholics. The latter have a large majority of converts, some being of the Francis Canal, and given to the Roman Catholics by his imperial predecessor, Emperor Francis I. The Greeks have two churches and a chapel. The principal public buildings are the castle, the very handsome county-hall, which was completed in 1784 and was reprinted in 1793, and a parish church on the town-hall, likewise a handsome building, the grounds of which are a large quadrangle of buildings, containing the office of the royal commission for the management of the affairs of the town. There are good Roman Catholic schools in the town, a seminary for schismatic Greeks and Illyrians. There are many noblemen resident in the town. A great number of the inhabitants follow various mechanical professions. The trade of the town is very great, chiefly in corn and cattle. There is a great facilitate of the Francis Canal, which unites the Danube and the Theiss, and is nearly 70 miles in length. It was opened in May, 1802. This canal shortens the distance between the Danube and the Theiss by 20 miles.

ZONARAS, JOANNES (Iouanēs Zonaras). Geneseis ('Generale Historia'). A history of the time from the Creation to the Christian era. He was a native of Constantinople, and lived in the reign of the emperor Alexius Comnenus. He was at first invested with the high office of private chamberlain of the emperor's body-guard, and that of protostraton, and from that position he rose to the rank of grand vizier. During this last period of his life, which falls in the time of Johannes Comnenus, he devoted himself to the publication of his history, and to the production of several great works of a historical and partly theological character. He is said to have been acquainted with all the affairs of the Eastern world, and his contemporaries, as well as by subsequent writers, terms of the highest praise, both as a scholar and a writer. He subjoins a list of those of his works which have been printed, and begins with the most important. 1. "Monumenta Graeca," 1729, 3 vols. 8vo, in the Bonn collection. His history was written in Greek, and translated into Latin by J. Quatremere, Paris, 1558, and 1672, and 1672, 1608, &c. and then printed in the Venice collection of the Byzantine history, 1729, 8vo, in 23 vols. fol. In the Bombay edition of 1792, of the Zonar's commentary, both in Greek and Latin, was printed by G. Beuerburg, Oxford, 1672, fol. G. Beuerburg, Oxford, 1672, fol. 8vo, is an exposition of the sacred text and those of the apostles, councils, synods, and ecclesiastical fathers. The Greek original of the latter, with the Latin translation, was published in 1672, and from that in whole or in part. Zonar's commentary, both in Greek and Latin, was printed in Greek in Coblenz, "Monumenta Ecclesiae Graecae," ii, p. 343, &c. There are several other works of Zonar, and among them are several homilies and letters which have not yet been printed, only in a fragmentary way: a complete list of them is given by Fabricius.
ZON 

(Biblioth. Greec. xi. 222, &c.; vii. p. 465, &c.; compare Cave, Historia Literaria, i. p. 648, &c.)

ZONE (the Greek Zong, a belt), a portion of a sphere intercepted between two parallel planes. When, on the globe of the earth, one plane is the equator, and four others are drawn parallel to the equator, two of which contain the circles in which the sun is vertical at the summer and winter solstices, and the other two, the circles of which are as far distant (on the earth) from the poles as the former are from the equator. A zodiacal belt is called the north and south frigid zones: throughout these zones the sun never rises during a part of the winter, and never sets during a part of the summer. The parts intercepted by the equator and meridian are called the southern and northern temperate zones: in every part of these there is always rising and setting of the sun for every day in the year; but in the polar regions all parts are dark six months of the year and six months illuminated. The torrid and frigid zones deserveth their names; but the temperate zones partake of both excessive heat and cold in those parts which are near the boundaries of the torrid and frigid zones. Every zone, in fact, paradoxic fold is the same; but the parts which are near the boundary of one zone and are far from the other are very different. The parts which are near the same boundary, and which are far from other zone boundaries, are generally called the zone. 

ZONOTRICHIA, Mr. Swainson's name for a subgenus of Fringilla, arranged by him in the subfamily Fringillinae, the family Passer. 

Subgeneric Character—Bill as in Fringilla; the comb unusually strong. Wings not lengthened; the first quill longer than the four next, which are of nearly equal length. Tail rather lengthened, slightly divided; the outermost feathers the longest. External toes slightly unequal. Tarsus and middle toe of equal length. America only. (Sw.)


ZONURUS, Merrem's name for a genus of Saurians, has been defined by Mr. J. E. Gray:—

Generic Character.—Lizard-like; ears exposed. Legs short; femoral pores distinct. Head depressed, broad behind, supra-orbital plate expanded. Tail depressed, with the exception of the five terminal annulated spiny scales. Back with imbricated subaponeurotic, belly with smooth scales. Five toes on each foot.

Geographical Distribution.—Old World. 

Mr. Swainson, who gives this character, and places the genus in his family Lacertidae, Long-tongued or True lizards, remarks, in his Classification of Reptiles, that fr. Gray's definition of this group makes him conclude that it is to be the exact representation of Stelloa among the thick-thonged lizards; but, as Mr. Gray brings within the same genus, &c., which does not include all the above definition, the subgenus, or type of Zonurus, is fearfull of being inserted into the minor divisions.

Mm. Duméril and Bibron arrange the genus under their subfamily, Physiophragmocnus, of Chalcidiznidae, and thus characterize:—

Tongue arrow-point-shaped, free on its anterior half, and only notched at the end, its surface velvety. No teeth in the palate. Maxillary and intermaxillary teeth equal, osselated, simple, blunt, qd against each other. Notostrals internal, both pierced in a central plate—the naso-rostral. Elytra. tympanic membrane expanded on the border of the auricular aperture. Four great parietal plates forming square, at the centre of which is the interparietal. Four set, each three-centred, of the naso-rostral plates, forming an unequal, slightly compressed, and carinate emargination below. Femoral pores in one, two, or three rows.

Mm. Duméril and Bibron observe that the Zonurus have a physiognomy which calls to mind that of the Steinfusill ut and Agamen. Their head is triangular, flattened, and wider than the neck; their trunk is short and depressed; their sides are enlarged, and arched from before backwards; their limbs are robust, offering a development proportioned to that of the other parts of the body; their tail is stout and of moderate extent. The tongue of the Zonurus has the same form as the true lizards, of an arrow-point shape, that is to say, it is narrowed in front, whilst on the opposite side it is wide and divided into two, so as to represent a fork or the branches of a Y, between which is situated the orifice of the trachea. The posterior extremity of the tooth on the upper part, and has a very slight crescentic notch. Its surface is covered with small, straight, filiform papillae, more or less short, placed close to each other so as to produce a velvety surface. In the Zonurus the jaw contains forty, which are equal, conical or subadultrical, with a simple and blunt summit. The upper surface of the head of these cyclosauria is a true oaceous buckler, furnished with plates, which, in number and disposition, preclude a different classification. There are some differences in the parts of the head and skull, but which are not marked. The cephalic plates of the Zonurus consist of one rostral, two naso-rostral, one inter-naso-rostral, two frontal-inter-naso-rostrals, one frontal, two fronto-parietal, four large equal quadrilateral parietals, together forming a square, at the middle of which is situated an and, the size of which, as the width of the plate, resulting from the disposition of the four parietals, is bordered on the right and left by three plates—the parieto-temporals—the two first rectangular and the third nearly square. There are, as in the lizards properly so called, four plates, one on each side, situated under the inter-parietal region itself is invested with three or four oblong plates. The external orifices of the nostrils are pierced, one on the right, the other on the left, at the extremity of the muzzle, at the summit of the frontal region, in a single line; the organs of smell are divided behind which are situated four lateral points in the skin, one above the eye and a small one below, and a very large one below, which the globe of the eye; the slit is longitudinal, but a little inclined forwards. The two are unequal; on the anterior extremities, the first toe is the shortest, the fifth comes next, then the second, and finally the third and fourth, which are of the same length. On the posterior extremities the four first toes are regularly graduated; the fifth, which is inserted very far back upon the tarsus, has its anterior extremity on the same line as the fourth, and the latter in the same line as the third, and again there are instances where it is invested by aculezeichnet granules. In general there is a small cutaneous fold in front of each shoulder, descending in an oblique line upon the middle of the edge of the breast, where it results in a carina, as in case of one species, Acanthodactyli. All the species of Zonurus have the lower surface of the thighs pierced with large pores, disposed either in a single row, in two, or even in three. In many there is, on each side, between the belly and the side, a rather deep furrow lined with granules. Sometimes the upper part of the neck and back have a sort of cuirass composed of quadrilateral scales in juxtaposition or slightly imbricated, disposed in transverse bands close-set against each other; in other cases this covering does not descend on the sides, where it is replaced by scales. Other species have the upper and lateral parts of the trunk furnished with small, nearly oval, ridged scales, which are distributed in longitudinal series and transverse bands, their interspaces being filled with granules which are generally very fine. Above, the limbs are clothed with rhomboidal or lozenge-shaped scales, which are carinate and imbricated; and the carinate
of those scales on the thighs and legs are developed and prolonged into points to such a degree that these parts of the body are in truth bristled with spines. The belly is defended by a kind of plastron analogous to that of the crocodiles, that is to say, it is formed of a great number of quadrilateral, flat, united plates, disposed in longitudinal bands and transverse rows. The tail is surrounded by verticals of great rhomboidal scales, which, most frequently, are very spiny.

M.M. Duméril and Bibron further remark that Merrem has preferred the generic appellation here given to Cordylus, but which had previously been employed by Klein, Gronovius, Cuvier, Fittinger, and some others—arbitrarily, however, for the word Cordylus (Cordylus) was used by Aristotle not to designate a species of Zonurus, but a larva of a Urodèle Batrachian, probably that of Triton viviparous.

M.M. Duméril and Bibron, taking the arrangement of the scales for their basis, follow Dr. Smith in dividing the Zonuri into three groups, subgenera of Smith.

1st Group.
(Cordylus.)

Character of the Group.—A small fold of skin hardly perceptible in front of each shoulder. Skin of the sides of the neck hidden by spiny scales, more or less strong, which bristle its surface. Cervical and dorsal regions covered with quadrilateral scales. Scales of the sides resembling those of the back: a furrow allure along the lower region of each side.

Example. Zonurus griseus, Dum. and Bibr. Three varieties:
1. Yellowish on the head and upper part of the limbs, orange on the neck, back, sides, and tail. Lower parts white.
2. Black above; below white, washed with black.
3. Brown, more or less dark above, sometimes inclining to yellow, and nearly always on the medio-longitudinal line of the back a yellow stripe bordered on each side with small quadrilateral black spots. Under part of the body whitish.

Localities.—Cape of Good Hope, Senegal.

Zonurus griseus.

Species with the lower eyelid transparent.
Example. Zonurus polyzoanus, Dum. et Bibr. (Cordylus polyzoanus, Dum. et Bibr.)

Character. —Skin of the sides of the neck folded and covered by granules. Cervical and dorsal regions furnished with subimbricated scales, forming close transverse rows. Lateral parts of the trunk covered with granules.


3rd Group.
(Pseudoordylus, Smith.)

Character.—In front of each shoulder a very small fold descending to the middle of the anterior border of the breast. Skin of the sides of the neck forming parallel lines, and composed with granules. Cervical and dorsal regions furnished with suboval ridged scales, forming quadrilateral series, separated by rows of granules. Scales of the sides similar to those of the back. No fold along the lower part of the sides.

Example. Zonurus microlepidotus, Gray; Cordylus (Pseudoordylus) montanus, Smith. Colour. —Brown or or less deep above, inclining more or less to black. Upper parts and sides of the neck, trunk, and tail transverse orange, yellowish, or greyish bands, with white whiten when the animal is kept in alcohol. Under part of the head black, and the other under parts pale yellowish orange.

Localities.—Cape of Good Hope. Sierra Leone.

Zonurus in the arrangement of M.M. Duméril and Bibron is immediately succeeded by Tribolonota, Dum. and Bibr.

ZUOCARPES, the name given to certain organic bodies which have been variously classified by botanists and zoologists as animals or plants, and have been described as species of the characters of each. By a reference to the work of Ebrell on Animale, and to the 'Speculum Algarum' of St. James, Hooker's 'British Flora', &c., it has been found that the same genera which the one author describes as animals, the other classifies as plants. We shall not here enter into an examination of the opinions which have led to the classification of these bodies as either as animals or plants, as all naturalists are agreed to the principal facts of the existence of these genera. They are all agreed that these belong to a part of the organic kingdom of nature in which there is the greatest difficulty in seizing facts which, under ordinary detection, could not once determine their position in the animal or vegetable scale. Definitions which are so easily capriciously higher up the scale are of no use here, and it is only accurate analysis, and comparison of the structure with the functions of these organisms, that an approach to a correct classification can be made. The body to which the term Zoucarpes has been applied is placed by us in the natural order Alge. Of the higher groups of algae we have spoken under Sea-Weeds and Water-Plants, but it is in the lower forms more particularly the Zoucarpes occur. These lower groups form the division Gloiocladiaceae of Harvey and the Dizotomaceae of Brodmann. Most of the plants belonging to these divisions appear the form of slime on the surface of stones, rocks, walls, or of scums, froths, &c., on water.

The Gloiocladiaceae consist of plants with numerous submerged, invested, and definite gelatinous, forming globule or filiform fronds. This division include the Chaetocline of Bory St. Vincent, whose general account of these formations is quoted by Lindley in his remarks on the natural order Alge. He says the gelatine or the slime in which the plants are invested resembles a layer of albumen spread with a brush; it exfoliates in drying, at last becomes visible by the manner in which it colour green or deep brown. One might call it a primordial creation waiting to be organized, and then assuming the form and structure according to the nature of the corpuscle which penetrates it or develops among it. It may further be said to be the origin of two very distinct existences: one certainly animal, the other purely vegetable. The matter, lying among amorphous mucous capsules, consists in its simplest nature of a yellowish or brown albumen, so producing more complex states of organization. Sometimes the mucous, which acts as the basis or matrix of the corpuscles when it is found in water, which is the favourite medium for its development, elongate, thickened, and finally forms masses of some inches in extent, float and fix themselves to aquatic plants. These masses are at first like the spawn of fish, but they soon change.
colour and become green, in consequence of the formation of interior vegetable corpuscles. Often however they assume a marl or ferrugineous appearance; and in this state they are examined under the microscope, they will be found completely filled with the animules called Na-vicularia, Lunulae, and Stylaria, assembled in such dense crowds as to be incapable of swimming. In this state the animules are inert. Are they developed here, or have they found their way to such a nidus, and have they hindered the development of the green corpuscles? Is the mucous in which they lie the same to them as the albuminous substance in which the eggs of many aquatic animals are fertilized? At present we have no means of answering these questions."

The following are the characters of the genera of this division, Gloiocladacae:—

Tribe I. Protncoccus. The plants in this tribe are filiform or globose, composed of articulated, branched filaments, invested with gelatinite. The fructification, so far as it is known, consists of capsules on the ultimate ramules. They are found under the influence of both salt and fresh water.

* Filiform.

Mesogloia. The axis is gelatinous; the periphery composed of branched subchitinous filaments.

Biatrochopseum. The filaments are hyaline, longitudinally striated, set with diamit whorls of moniliform ramuli.

Draparnaldia. The filaments hyaline, emitting scattered penicils of coloured ramuli.

Coryneophora. The frond camosu-coriacous, hollow, formed of filaments issuing from a central point.

Myriogona. The frond minute, gelatinous, parasitical, composed of single filaments, fixed at their base to a thin expansion.

Tribe II. Rivulariae.—The plants are more or less globose (never filiform), camose, composed of continuous filaments, united within. To this tribe belongs but one genus, Rivularia.

Tribe III. Nostocinae.—The plants more or less globose, gelatinous or carose, including granules scattered through the mass or arranged in moniliform series.

Protncoccus. The globules aggregated, naked, filled with granules, seated on a hyaline jelly.

Hemturococcus. Minute gelatinous fronds, aggregated into a frutulous crust, and including scattered granules.

Palinna. A polymorphous gelatinite, filled with distinct globules, somewhat united within.

Echinula. Minute gelatinous fronds, filled with elliptical corpuscles, radiating from a centre.

Nostoc. A gelatinous polymorphous frond, filled with crop moniliform filaments.

The species of Mesogloia are marine plants. They are of a purple, rose-red, or green colour. The M. Huberti is found on the coast of Devonshire. Mrs. Griffiths says of this plant—"The structure is very remarkable: the frond appears to be made up of tufts of fibres, radiating from a central point, each tuft, when separated in water, is united under a glass, resembling a double Aster or Sea-Anemone. In the centre of the petal-like fibres are masses of purplish grains."

The species of Biatrachopseum and Draparnaldia are found in fresh-water streams and wells. They are not numerous. The latter genus was named after J. P. R. Draparnaud, a French botanist, who has paid much attention to the study of the Algae. The Chaeophyceae are green, chlorophyllous, filamentous, round, jell-like looking masses, and are found attached to pieces of stick and other objects in boggy pools, streams, and rivulets.

Coryneophora and Myriogona are small genera, and are found where the sea washes, on the pebbles of the shore, or on rocks and on sea-plants. The species of Coryneophora are numerous, and are found both in the sea and in fresh water. The crust of these plants is sometimes so closely attached to the rock on which it grows, so scarcely to be distinguished from it except by its colour. They are mostly of a red colour. The commonest species, the P. nivaeus. This little plant has gained a large share of attention on account of its being supposed at one time to be the cause of red snow. Now however the animal kingdom has put in a claim for a share in the production of this phenomenon. [Snow, Read.] Most of the species of Haeckelia, and Bivularia, a family of polygastic animules. Many of them have certainly the power of locomotion during the whole period of their existence, and not like some of the Zoo-carpus, which only move about at the commencement of their organic life. The species of Nostoc are found on rocks, both in sea and fresh water. Most of them are gelatinous, of a yellow or green colour, or transparent, and shrink almost to nothing in drying.

The division Diatomaceae consists of granules of various forms, plane or compressed, more or less transparent, rigid, often fragile, arranged in a lengthened or circular mass, which are free, packed, or imbedded in a mucous mass, and at length separating into distinct segments.

Of the two divisions, this is certainly the most anomalous with regard to its relation to the animal or vegetable kingdom. Agardh in the British state of the question of animules, which he referred here have as much relation to the mineral as to the animal or vegetable kingdom. He says that some of his Diatoms are nothing more than vegetable crystals, bounded by right lines and collected into a crystalloid form, and having a colour derived from minerals than that the individuals have the power of again separating. The following is the arrangement of the British genera of this family from Hooker's British Flora:—

Tribe I. Desmidiae.—Filaments cylindrical or angular, at length separating into segments, which are called frustula.

Melosira. Segments forming simple pseudo-articulated filaments, constructed at the articulations, fragile, and easily separating. 

Desmidium. Segments forming simple angular pseudo-articulated filaments, transparent at the crenated angles, at length separating.

Tribe II. Fragilariae.—The filaments plane, extremely fragile, composed of rectilinear segments, united together and forming a frustule.

Fragillaria. Segments forming pseudo-articulated, densely striated, fragile filaments, separating at the stria.

Achnanthes. Frond stipitate, standard-shaped, composed of a few segments, which at length separate and form a frustula.

Diatoma. Segments forming pseudo-articulated plane filaments, at length separating and cohering at their angles. 

* Frustula. Segments linear, free or imbedded in a shapeless mass, solitary or binate.

Tribe III. Siggilariae.—Segments plane, wedge-shaped.

Siggilia. Segments wedge-shaped, separate, stellate, not united into plane laminate.

Liencnophora. Segments wedge-shaped, fimbriated, stipitate.

Meridion. Segments wedge-shaped, in plane sessile circles or segments of circles.

Tribe IV. Cymbellacea.—Segments elliptical.

Gonyphonema. Segments subgenuine, terminating a very slender simple stalk, linear or wedge-shaped.

Homocladia. Segments arranged in numerous, binate, distant, parallel series, within a tubular frond.

Berkleya. Segments in longitudinal series, within simple mucous filaments, which are free at the extremity, but united below into a roundish gelatinous mass. 

Micromega. Segments arranged in longitudinal series within a cartilaginous or gelatinous frond.

Scizozonium. Segments in longitudinal series, and included in a simple or branched, filiform, mucous, membranaceous frond.

Cymbella. Segments elliptical, binate, free or imbedded in a mucous mass.

Such are the definitions of these genera, as given by
botanists. With a somewhat different technology, the same genus with the same names are described by zoologists. Thus of the above genera, Ehrenberg, in his "Insuffusions-thierchen," claims the genera Frustulia, Achnanthes, Fragilarién, Schizonema, Desmidium, Gomphonema, Meridion, and Micromega, besides many species from other genera.

The minute bodies belonging to this division of organized nature are found wherever water exists in any quantity. The pebbles on the sea-shore, the rocks on the coast, and various species of algae and plants of marine growths, together with the shells, and rocks, and various kinds of trees, and plants, and human beings, and animals, and fish, and a host of such other things, and with them, and they can only be detected by the naked eye when collected together in such quantities as to alter the colour or apparent consistence of the substance in which they are found. They are not however at all sea-water, nor are they found in fresh water, rivers, and brooks, boggy pools, ponds of stagnant water, and mineral-springs, and many of them will make their appearance in solutions of salts and infusions set aside for only a few days. The forms of the segments or frustule are various; sometimes they are quite flat and angular, at other times they are more or less globose. In many instances these segments consist of silice, and when regarded as animals, this part of the body is called its skeleton. It is on account of their siliceous character that many of the species of these animals have been lost in a fossil state, and already fossil species have been described that have not yet been determined to exist in a recent state. Although exceedingly minute, they sometimes collect in large quantities, and give a nodular character to objects on which they are deposited when dried. In "The Proceedings of the Linnean Society" for December, 1840, Dr. Lankester traced the apparently whitewashed appearance of the stones in the bed of the river Annan in Dumfriesshire, to the existence of these minute Diatoms. The species described in this instance has been described by Ehrenberg as the Synedra Ulna, and by Greville as the Dintom truncatum.

These little bodies were parasitic on a Convera that covered all the stones, and it was only when the river fell during the summer that the white appearance was observed on the stones. Many of the marine species so entirely cover the plants to which they are attached, as to give them a different appearance altogether. The segments are mostly transparent; they are however sometimes green, brown, yellow, or rose-colour. They are frequently marked in the inside with globules, granules, or strie, and it is to these that Ehrenberg has assigned the functions of stomachs, ovaries, &c., and on the ground of this structure, together with their power of locomotion, has referred them to the class of animals. The history however of these organisms has not yet been sufficiently worked out to enable any one with certainty to refer them either to one division of the organic kingdom or the other. In the mean time an important field of inquiry is open to the naturalist, who desires to pursue this subject, and who may be interested in the investigation of materials and the philosophical application of data.

Let any competent person look not only at the mass of existing species, but at those which are extinct, known only by their fossil remains, that have been noticed since the last acquisition, but which has hitherto passed without a considerable accession—and he will be pardoned for thinking that it is somewhat hard to draw conclusions without having the whole of the premises before us.

Alston's method was founded on a division of these which may be arranged, first, with reference to each group (sæc æve or sæc ëlæ) of the des plantae, according to a species, for example, which has pectoral mammals, apes, and elephants; and animals which have abdominal mammals—dogs and cats.

To the accuracy of Aristotle's descriptions those who are qualified by an acquaintance with the subject and the language will bear testimony; but it must be owned that some of those who have attempted the task have been very mean or have not perceived or have not been aware of the science of Greek, and none of the science on which its invaluable work depends. His talent for observation and generalization was of the highest order; and never did man more skilfully employ the ample means which the liberality of his royal patron placed at his disposal.

Of Alcian (Aléian Claudius) it may be sufficient to say here that he seems to have kept a sort of patent receptacle for any information relative to such knowledge as he could collect, which he put together without knowledge of the preceding or contemporaneous investigations and entertainments of Pliny, proue he was to record tale, as an author of a very different capacity; but the ideas that he gave to society was filled from the art of Aristotle, on whom he drew largely for his zoological.
descriptions generally. In the almost equally amusing pages of Aristotle will be found a scattered but copious collection of facts relative to imimals, stated apparently more with a view to the pleasures of the table, the leading subject of the book, than to the advancement of natural history.

In the interval which ensued between the age of the ancients and the revival of letters much zoological as well as other scientific knowledge seems to have been preserved among the Arabs and in the East generally, where it became, however, highly charged with fable, as in the account of the Roa; magnitude, which is a principal element in the more important notions of the sublime, being the prevailing exaggeration.

Albertus Magnus appears to have been the first European writer of note claiming the zoologist's attention, after the silence of the dark ages; and in his Historia Animalium, various tracts of access to antient authorities no longer exist.

Belon had deeply studied Aristotle; and the works of the French traveller on the natural history of birds and fishes not only contain much valuable information, but an attempt at classification. [Birds; Mammalogy; Reptiles.]

The brilliant style of Buffon fixed the attention of the civilized world upon the subject which his eloquence at once rendered captivating. A more severe writer might have done greater things for natural history as a science, but Buffon at once secured a willing audience and made all Europe his class. To him above all others may be conceded the merit of making the subject decidedly popular and for ever. The way was thus prepared for Linnaeus.

In the last edition of the Systema Naturae, revised by its great author, the Animal Kingdom is thus arranged:—

The Natural Division of the animal kingdom is indicated by the terms in each family; while philosophical disquisitions may, without hesitation, be placed next after Aristotle himself. [Birds; Mammalogy; Reptiles.]

**Heart unilocusular:**
Senses:
- Tentacles
- Blood
The inputum a Trichiurus, Four Urano-
Osliacion, breathing Apodes, Mammalia.
A sanies II.

**Heart unilocusular:**
Senses:
- Feet, Teeth
- Lungs
- Jaws
- Penis
- Eyes
- Blood
- Lungs
- Jaws
- Penis
- Eyes
- Blood

V. Insects.

**Heart unilocusular:**
Senses:
- Tentacles
- Blood
The inputum a Trichiurus, Four Urano-
Osliacion, breathing Apodes, Mammalia.
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V. Insects.

**Heart unilocusular:**
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- Jaws
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- Blood
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- Jaws
- Penis
- Eyes
- Blood

V. Insects.
Sphena, antennæ thickest in the middle. Phalaen. antennæ thickest internally.

VI. Hydroptera.

Libella, tail with nippers; mouth multi-mucilaginous; wings extended. Ephemerello, tail with two bifles. 1: mouth toothless; wings erect. Myrmeleon, tail with nippers; mouth bit dentate; wings deflected. Pappus, tail simple, mouth bit dentate, wings deflected. Penna, tail chelate, mouth rostrated, wings incumbent. Regina, tail with one thread (filo); mouth bit dentate, wings deflected.

V. Hymenoptera.

Cympis, sting (aculeus) spiral! Trichobiris, sting serrate! Bivale. Sirex, sting serrated under the terminal spine of the abdomen. Ichneumon, sting exerted! Triple. Sphe, sting punctorial; wings flat; mouth tongues. Ophiops, sting punctorial; abdomen vailated (formeius). Vespa, sting punctorial; superior wings plicated. Pseus, sting punctorial; superior wings plicated. Pernio, sting obsolete; no wings on the neuters. Muscile, sting punctorial; no wings on the neuters.

VI. Diptera.

Ectcta, mouth closed; no mouth. Tipula, mouth slit lateral; four palps. Musca, mouth toothless with a proboscis. Tabanus, mouth with a proboscis and connect. teeth. Culex, mouth with a siphoniform process; mouth with a proboscis. Empusa, mouth with an inflected maxillose; the mouth with a stinger. Aulius, mouth with a subulate projecting rostrum. Babylia, mouth with a projecting setaceous rostrum. Hippob., mouth with a submutant, very short subrostrum; subrostrum 0.

VII. Apitera.

* Six feet. Head distinct from the thorax. Lepisma, tail with exerted bristles. Pollina, tail bifid, inflected, salatorial. Termea, mouth with a mucilaginous. Pediculus, mouth with a sting; aculeus of being the ends. Mouth with an inflected maxillose with a sting; feet salatorial.

** Feet 8—14. Head and Thorax united.

Acarus, eyes 2, feet 8, palps Palangia, eyes 8, feet 8. palps. Chanore, eyes 8, feet 10; first pair chelate. Monoculus, eyes 2, feet 14.

*** Feet multitudinous. Head distinct from the thorax. Scolopendra, body linear. Julis, body cylindrical. It is possible to feel that the specimen without being struck with the comprehensive views of the author, who the imperfect light which existed at the time is considered. Reaumur, Swammerdam, Moutet, Goedart, De Bounet, and Lyonnard indeed had described the Julis; but the Systeme Naturae was published: but many of the leading characters of insect-organization were still involved in darkness. One great error will be manifested to all the classification of the Crustacea among the invertebrates. The most curious observation must have satisfied Linnaeus that the Crustacea breathed by means of gills, and that therefore they could not be placed under the same category with animals whose respiration was carried on by Spiracles: Pani Later. It is not less interesting to consider the terrestrial habits of the Land and Water Crabs [Brugus; Gecarcinus; Pagurus] might have weighed with him, in the absence of any definite information when it was written. The most observant and enlightened labourers in this department, that one that will seem to be a work is at the disposition of the genus Cancer, Scylla. The most novel observation must have satisfied Linnaeus that the Cancer breathed by means of gills, and that therefore they could not be placed under the same category with animals whose respiration was carried on by Spiracles: Pani Later.

Ceratothorax, thorax mucronate-callosus at the sides. Lepitoca, maxillae attenuated at the apex; thorax rather smooth. Centuaria, clavulae existent; abdomen plicato-papillate at the sides. Estelar, point (mucro) of the breast resilient from a pore of the abdomen. Cecidela, jaws exerted, toothed; eyes rather prominent. Buprestis, head retracted within the thorax. Dytiscus, posterior feet ciliated and formed for swimming (natail). Carabus, thorax obtus- date, truncated posteriorly. Necydalis, elytra dimidiate; wings asked. Forficula, elytra dimidiate; wings covered; tail with nippers (forcipata).

II. Hemiptera.

Blatta, mouth maxillate; wings coriaceous, flat; feet ciliordial. Manis, mouth maxillate; anterior feet serrated; claw simple. Gryllus, mouth maxillate; posterior feet salatorial. Polgara, rostrum inflected; forehead (frons) produced, empty (inanis) anthera capitate. Crcoa, rostrum inflected; posterior feet salatorial. Notopara, rostrum inflected; posterior feet natalior (ciliated). Neta, rostrum inflected; anterior feet cheliiform. Cinxus, rostrum inflected; feet ciliatorial. Aphoe, rostrum inflected; abdomen two-horned. Cereus, rostrum pectoral; feet posterior; salatorial. Coccus, rostrum inflected; abdomen bristly behind in the males. Thripa, rostrum obsolete; wings incumbent on the reflexible abdomen.

III. Lepidoptera.

Papilio, antennæ thickest externally; wings erect.


Upper cruscatus with a straight suture Coleoptera 1. wings semicruscatus, incumbent Hemiptera 2. brumus with brumus Lepidoptera 3. membranaceous, anterior Hemiptera 4. Wings 2. Balances (Halteres) in lieu of the posterior wings. Diptera 6. Wings 0. i.e. the body without wings and elytra. Apera 7.

** Antennæ elavate, thickened externally. Scorabacus, antennæ with a fissile clava; anterior tibial dentate. Lucanus, antennæ with a compressed clava, the widest side fissile. Derrnest, antennæ with a perforate clava; a second salt, the scarcely marginate thorax. Hister, antennæ with a solid clava; head retrac- tile within the thorax. Bygrhus, antennæ with a solid ovate clava. Gyrius, antennæ rather rigid; eyes four. Astterius, head posteriorly attened. Caracolus, antennæ under the horns. Splinthus, thorax and elytra mar- ginate. Cochicetis, antennæ with an obtuse clava; palps with a truncated clava.

** Antennæ Riformis.

Bruchius, antennæ filiform, thickest externally. Cassida, body ovate; elytra marginate; head covered with a shield. Plistus, thorax receiving the head; antennæ with the last joint the longest. Chrysomelya, head ovate, immarginate. Hypsa, antennæ extended (porreeta), approximate, fusiform. Metacara, antennæ subrostrate. Thalia, antennæ dilated. Tenebris, thorax marginate; head exerted; body oblong. Lampyris, elytra flexible; shield of the thorax overha- damping and receivng the head. Mordella, laminae at the base of the abdomen; head infacted. Staphylus, elytra divided into two parts (dubia) covering the wing; two vesicles above the tail capable of being exerted.

*** Antennæ stecceous.

Ceranymbus, thorax mucronate-callosus at the sides. Lepitoca, elytra attemuated at the apex; thorax rather smooth. Centuaria, clavula eflexible; abdomen plicato-papillose at the sides. Estelar, point (mucro) of the breast resilient from a pore of the abdomen. Cecidela, jaws exerted, toothed; eyes rather prominent. Buprestis, head retracted within the thorax. Dytiscus, posterior feet ciliated and formed for swimming (natail). Carabus, thorax obtuse- date, truncated posteriorly. Necydalis, elytra dimidiate; wings asked. Forficula, elytra dimidiate; wings covered; tail with nippers (forcipata).

II. Hemiptera.

Blatta, mouth maxillate; wings coriaceous, flat; feet ciliorial. Manis, mouth maxillate; anterior feet serrated; claw simple. Gryllus, mouth maxillate; posterior feet salatorial. Polgara, rostrum inflected; forehead (frons) produced, empty (inanis) anthera capitate. Crcoa, rostrum inflected; posterior feet salatorial. Notopara, rostrum inflected; posterior feet natalior (ciliated). Neta, rostrum inflected; anterior feet cheliiform. Cinxus, rostrum inflected; feet ciliatorial. Aphoe, rostrum inflected; abdomen two-horned. Cereus, rostrum pectoral; feet posterior; salatorial. Coccus, rostrum inflected; abdomen bristly behind in the males. Thripa, rostrum obsolete; wings incumbent on the reflexible abdomen.

III. Lepidoptera.

Papilio, antennæ thickest externally; wings erect.

ZOO 808

ZOO
sections, became the load-star of zoologists. The Anatomie Compote, the Osteumossil, and, finally, the Régle of Animals, were the results of his acute and comprehensive demonstrations. In his hands Comparative Anatomy be

took a new form among the dynamics of natural history, and by its aid he rebuilt the extinct fossil forms that before his time lay scattered over the face of our earth in wild and apparently inextricable disorder.

It is not therefore surprising that Mr. W. S. Macleay thus writes:—"As to new views or principles in natural history, this mode of studying the variation of structure in different animals, in preference to classing them according to an arbitrary division of organs, is perhaps the only one to which I can justly lay full claim. It is possible indeed that Hermann, in his very remarkable work entitled Tabulae Anatomiae Animalium prior to this period, may have intended to keep some such principle as this in view; but, as with him, unfortunately, the slightest analogy constituted an affinity, we may understand how he found it impossible to trace the mode in which structures vary, as much more so to apply the maxim of arrangement. On a cursory glance at the principles of arrangement laid down by Aristotle at the commencement of his Historia Animalium, he may also be supposed by some to have understood this doctrine of variation in animal structure; but it is easy to show, that although this extraordinary man understood it to a certain degree, he confined himself in the passage in question to the division of organs,—a course of reasoning that led him quite away from the conclusions he would indubitably have arrived at, had he followed the variation of general structure. Still I shall not be surprised if the originality of even this principle be some day disputed with me; for when the question was asked, Is there anything more certain than that the earth has been inhabited in former ages, and that man has been formed on some principle of arrangement, the answer was, It hath been already of old time which was before us. And certain it is, that the doctrines of quinary distribution, of the circular progression of a series of affinities, and of analogies, as distinct from affinities, have all been in some measure advanced by analogy. The reason being, that some of the first great attempts that have been made in the construction of the universe given to it from the days of Plato and Cicero; that Linnaus, Pallus, and Desfontaines have mentioned certain analogies in nature as distinct from affinities; and that one of the most distinguished zoologists of the present age, and a foreign mem-

ber of this Society, Professor Gottlieb Fischer, of Moscow, has stated the progression of certain series of affinity being in circles. I can safely say however, that as I arrived at a knowledge of Lamarck's theory of gradual evolution or development, a theory to which the experience of every succeeding day becomes more and more opposed. About this period, almost contemporaneously with a similar movement in botany, some of the more imaginative and philosophic minds began to perceive analogies in organs and parts of the animal frame which previously had only been regarded under their distinct or individual elements. In general such knowledge of these generalizations of this nature which first made comparative anatomists acquainted with the bones of the cranium and the essential resemblances, or homologies, as they are termed, of the component elements of a vertebra under the names of caryons and the like, have been added to by our knowledge of these analogies in the animal individual, is too closely connected with similar researches after analogies and analogies in zoology to be omitted in the present sketch of the history of that science. Goethe, he founder of morphology, or the doctrine of organic analogies in plants, also made the first step in the advance-

ment of similar, or, as they have been termed, transcen
dential views, in the anatomy of animals. The poet's dis-
covery of the intermaxillary bones in man, the first fruits of this essentially synthetic mode of analysis, was so immediately followed by such similar brilliant ap-

creations of true analogies by his successors Oken and Geoffroy, and the disciples of their school, which have more than compensated for the less substantial results of the exuberant imaginations, which have too often had the effect of deterring the sober student of nature from digesting the words of authors from which valuable information s to be obtained.

Germany and the Netherlands have reason to be proud of the names of Illiger, Temminck, and Wagler. Of these M. Temminck continues to enlighten zoologists with his excellent works; whilst Professor Lichtenstein and Dr. Rüppell still pursue their praiseworthy course.

In our own country and time the Quinary System has been adopted by one of our most accomplished zoologists in his Horse Entomologica, An-

nulosa Javanica, his Remarks on the Comparative Ana-

1 Lecons d'Anatomie Comparée, vol. I.

2 Résumés d'Anatomie, vol. III.

3 Animaux sans Vertèbres.

4 Zoological Society, No. 1781.
for the naturaliste. 1. La moisissure produite par la cor-
ruption des matières animales; 2. L'origine des animaux
infusoraires par celle des matières végétales. Les bornes de
cet ouvrage ne permettent pas de développement plus
ample de cette idée qui présente une vérité à poursuivre."
Again, in page 184 in the following passage: "— Il ne
faut pas croire que la série des Mammifères soit à consi-
derer dans une direction droite comme une suite. J'ai
fait quelquefois voir qu'elle forme une galerie ou la
vuteur se trouve à un milieu, ayant les espèces d'animaux
de ces côte. C'est-à-dire, l'auteur s'imagine que chaque
série de la première division dont les doigts ou pieds ne
sont réunis par une membrane, traverser de l'figure
par les autres parties, la séparation, le cote, les espèces
qui, pieds ou pieds sont réunis par une membrane. Une représen-
tation des genres de Mammifères en cercles entourant le
centre ou est placé l'homme, et se touchant mutuellement,
suivant que les propriétés de différents animaux se sem-
blent sourt peu-t-être la plus conforme à la Nature.

Mr. W. S. MacLeay has brought to bear on his intricate
subject a comprehensive knowledge of natural history,
much learning, and the close astute reasoning of a mind of
indeed some of his. The system has been applied in this
country, by Mr. Vigors, to the Birds, and by Mr.
Bennett, to the Mammalia and fishes. With certain modi-
fications it has been applied, by Mr. Swainson, to theanimal
kingdom generally, who, in his arrangement in the several
volumes of the 'Cabinet Cyclopaedia' filled by him, has
however left out Man.

On the Continent the Quinny System has never found
favour, and it has now few if any followers in this country.
But it may fairly be said of it, that, like the system of
Linnæus, it has influenced more both in science and ama-
ties. We have heard it lamented by some, that a man of
judgment should, unconsciously perhaps, have employed his
powerful mind in a mode calculated to rivet the fetters
that Bacon had struck off; but these could hardly have been
avoided, as was the name, and with which Mr. MacLeay
constantly impresses on his readers that zoology is a science
which must always depend upon experience and observed
facts; and that the grand object of comparative anatomy
is the formation of such a collection of recorded facts of
comparison as will demonstrate the use of the various organs;
and, above all, may lead us to the better knowledge of the natural arrange-
ment of the animal kingdom.
The thought may be said that, like those
who treated the Bacsonian or inductive method with con-
tempt, and laughed and railed by turns at the author of the
'Novum Organum,' immediately after its publication,
not many had read his works through; and of those, few
had taken them.

That he was wrong in some of his notions may be true:
for instance, he has most ingeniously endeavoured to show
that the Cephalopod approximates to the Turtle (Testudo);
but Professor Owen has proved to us by dissection that the
Cuttlefish comes nearest to the Mynas and Lampree
among the Vertebrata.

It is not fair to make Mr. MacLeay answerable for the
vagaries of his followers, and the Procrustes-like violence
with which they occasionally force a form into what they
conceive a proper place merely because that vacant place
wants a form. If his injunction to inquire into the organi-
ization and habits, as a first and necessary step, had been
attended to, 'Cathetora' would never have been placed
among the Vertebrata (Vertébrés; Télaugolla), not the
case of an insect among the Mammalia (Théliodömes).
A striking feature in the zoological character of the pre-
ent period arises from the numerous monographs which
have appeared or are still forthcoming. It is by such
catalogues and collections of materials that the path of the sys-
tematist is especially enlightened.

In America Wilson's delightful book and the magni-
ificent work of Audubon have opened up the complete
natural history of the birds of their country; nor must the
abundant work of Nuttall be forgotten.

In Italy Poli had familiarized us with the organization
of the Mollusca in the Sicilian seas; Delle Chiave and Phi-
lipe had followed him, and Madame Power has settled
the subject by the discovery of the shell of the
Pap. Nautilus. The Prince of Canino and Musignano, who had already so ably supplied what was
wanting in Wilson's American work, has left nothing to be
wished in his excellent Fauna Italice.

England had produced the prominent names of Wil-
lugby, Pennant, Latham, White, Leach, Berck, Mar-
tag, Selby, Gray, Swainson, Stephens, and Cuvier; but a
powerful stimulus to the Zoological Society of London,* in
the establishment of which Sir Stamford Raffles had the principal share. To the
taste for zoology thus diffused may in a great measure
be attributed the ready acceptance which the great
Hand-Book of Natural History received, and the more
slowly found or are finding, and the well-merited praise
which has enabled Mr. Gould to publish his mag-
ificent works. 'The Birds of the Himalaya Moun-
tains, The Birds of Europe,' the monographs on the
Hampshire Fishes, and the Reptiles, and, though
least, not least, 'The Birds of Australia,' have all been
worthy to the manner in which it is that science has
been advanced. We are assured that the results of Belcher's voyage and James Ross's southern
expedition.

In France the spread of zoological knowledge has become
most extensive; and all Europe has been deriving sat-
isfaction from the publication of admirable hand-books,
treated Manuals of the French zoologists. The Mammals
and Ornithology of Lémel, the Manuel de l'Homme of
Nouelle des Mollusques de Rang, the Comparative
the Zoology and Actinologie of De Blainville, and a
number of other works have been published, which have
been of important use to every one engaged in the study.
In the Suites à Buffon, the Reptiles have been most
elaborately worked out and illustrated by Duméril and Robin of
the Zoological Society of Milne Edwards. To crown all, the
Osteologie of De Blainville shows in the course of publi-
cation, a work which will confer honour on the nation
al school of zoology.

But we have been far from idle in England while fol-
lowing the steps of Cuvier in the compilation of plas-
tology. Conybeare, De la Beche, and Buckland have
broke ground in the search for fossil animal forms; and
although we cannot claim Agassiz as a countryman,
we have had the satisfaction of incurring in the publica-
tion of his great work on fossil fishes, which has
riched the fossil catalogue beyond hope in almost every
class of Vertebrata, and, among these, the grand gen-
erous additions, Mylodon, Glyptodon, Téxodon, have
been enormous reptiles, and, lastly, the gigantic Icthy-
Newfoundland and, eminently successful. Professor Owen has shown that the macro-structure
brought to bear upon the largest as well as the smallest
creatures being.

The articles relative to zoology in this work may be
found by reference to the following index:—

Kingdom, Animalia.
Sub-Kingdom, Vertebrata.
Class, Mammalia.

Mammalogy.
Sub-order, Placentalia.
Order, BIVANA.

Albinous, Man. Skeletou.
Order, Quadrumana.

* In the article Wor-Wor the words 'Arab Pheasant' are errone-
ously printed for 'Arab Phasianus.' But one living Arab Phasianus has
we know, has ever reached England.

+ BAYO. The height of the numerous genus Deinos, has, like the
height of the Cuvierian, shrunk before the severity of competition.
With this great animal, a great creature, and a shell which, so to
say, was assigned to the largest known species, Deinos pisces, has led to
the passionate discussion, which has been involved in the name.
The most curious part of the present animal is the comparative shortness of the thoracic segments, which is a fact of
which, nearly half of the shell is formed. Professor Owen has also
made out five species, none of which is small. The strange* mem-
brane of the back of the neck has led Professor Owen to the
country * of Deivos inhabited by scraping up the coat of the
* Merina for their food.
arcos. Helictia. Herpestes. Hyaena. Hyma-Do-
Hound. Ounce. PAND. Phoca. Phocidae. Plant-
glanda. Pointer. Polar Bear. Polecat. Prionodon. Pro-
opard. Sea-Lion. Seals. Serval. Spinel. Stem-
Tigers. Trichechus. Urus. Ursus. Viretta. Viver-
Zenik.

**Order Cetaceae.**

Toxodon. Zebr.

**Order Chiroptera.**

Adapis. Anoplochires. Belomylus. Behe-
moth. Chaliochus. Choropotos. Dietoles. Di-
Toxodon. Zebr.

**Order Carnivora.**

arcos. Helictia. Herpestes. Hyaena. Hyma-Do-
Hound. Ounce. PAND. Phoca. Phocidae. Plant-
glanda. Pointer. Polar Bear. Polecat. Prionodon. Pro-
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Class PLANK.
Air-Bladder. P. Fish. Ichthyology.

Order BRYACHI.
eum. Sargus. Scoum

Class MALACOPHYTHI.
 halted. Leuciscus. Lota. Mor

Class CONCHOBRANCHI.
usia.

Order MALACOPHYTHI.

Order PLECTOGEN.
Balistes. Sun-Fish.

Order ONCHODON.
Chi
 kite. Squid. Sturgeon. Torpedou. Ter
deo.

Class CONGON.
G. Cephalo
thys. Ophiuroidea. Poly
E't. Spies. Tetra

Class GASTROR.
cannelaria. Capsula. Carinaria. Caro
cella. Cary
tebbranchiata. Chismobranchiata. Chunias. Chi
tia. Clithoidea. Clitthus. Codill
enticum. Dermatobranchia. Dobellia. Doliol
liri. Ecteostoma. Ecto
tomatos. Eolidia. Eulina. Euom
Lima. Limax. Lina. Limonn. Linsella. Li

Class CARAC.I.

Class PLANK.
Air-Bladder. P. Fish. Ichthyology.

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tomatos. Eolidia. Eulina. Euom
Lima. Limax. Lina. Limonn. Linsella. Li

Case of an insect mistake for the shell of a 9f tropop. by Syanica.
### Zoophytes

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*Note: This table represents a general classification of zoophytes, including major categories such as zooxanthellate, non-zooxanthellate, and tube-dwelling forms.*

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**References:**
- Blainville, 1834
- Claparède, 1843
- D'Orbigny, 1844
- H. de Saint-Hilaire, 1846
- G. C. L'Herminier, 1824
- 150th anniversary of H. de Saint-Hilaire's death.
CLASS ZOOPHYTA. Body surrounded anteriorly with a simple circle of pinnated tentacula (generally eight in number); ovaries internal.

Some of the animals are single, others aggregated; but in general they are organically united in a common living mass, as the buds of a [dicotyledonous] tree are united to the trunk.

Family 1. Tubipora: including the genera Cuscuctaria, Telesto, Cornularia, Clavularia, Tubipora. [TUBIPORA.]

Family 2. Corallina: including the genera Corallium, Lophia, Gorgonias, Eunice, Pachinia, Plexaura, Muricea, Primnoe, Antipathes, Cirripathes. [POLYPARI A CORRITICA.]

Family 3. Pennatulacea: including the genera Umbellaria, Virgularia, Pavonaria, Pennatula, Veretillum, Re-


These families appear for the most part natural and well defined; because the structure of the Polypi, the manner of their union, the composition of the polypiferous masses, and their free or attached habit of existence have all been compared. One general mass of classification is referred to these volumes, that of M. De Blainville, who, in his Actinologic, it appears well fitted to introduce the student to a contemplation of the innumerable forms comprehended under the term Zoophytes; but it is evidently capable of improvement hereafter, when the ever increasing researches of microscopists and anatomists have made us more fully and exactly acquainted with the true relations of the internal organization of the Polypi of the several families to the structure of the higher groups of the animal world.

In the point of view the reader will And much advantage from consulting the Summary given by Dr. John- ston, in his work on British Zoophytes, 1836; the detailed examinations of particular groups by Milne Edwards (An- nales des Nat. d. parasites, parisiens); and the efforts for classification by Dr. Farre (On the Phyletic Position of the Zoophytes of the Royal Society (1837). As Blainville's classification includes the Actinopoda as a part of the Zoophyta, we have given under that head a copy of his general Tab. as an Index to the whole subject [ZOOPHYTA].

ZOTITICA. [VARITANIAN, p. 133.]

ZORASTER, or ZERDUSHT, the founder of the religious system of the Parsees, was born about 586 B.C., at Urmi, a town of Azerbaijan, in the reign of Lohaspas, the father of Gushaspas (history of the Persians). His parents were in a humble condition, although of a noble family, and some of the Eastern authorities trace the lineage of his father, Purushasp, to Feridoon. Daghsis (Anqetis) wrote Dogola, the mother of Zoraster, is also said to have been one of the earliest of the women who sold him to oblige his father; but it is reported to have been so spotless as to attract the favor of the Deity, who foretold to her the greatness of Zoraster, while yet in the womb, through the medium of magic dreams. Zoraster was said to be born in the month of Shahrvar. The birth of the Persian prophet was attended with many miraculous circumstances calculated to make the persons who saw it adopt and spread the belief in the divine mission of the new-born infant. Many of these miracles have found their way into classical writers, and many mentions that Zor- aster laughed on the day on which he was born, and that his brain palpitated so violently as to repel the hand when placed on it. (Hist. Nat., vi., c. 16; H. Lord's Account of the Modern Parsees in India, c. 3.) Miracles of this kind were always made to precede the life of a remarkable man, and they serve to show the high influence which Zoraster obtained throughout life, and the respect which posterity paid to him in this respect. The years of Zoraster's childhood quietly passed in his native town—although his historical life in adorning them with the most extravagant accounts of his exploits when a child. However, he must have soon turned his attention to the study of nature, as it is probable that he passed twenty years in the depths of the mountain Elbroos (Plyni mentions this with a slight alteration, Hist. Nat., xi., c. 42) before he went to the court of Gushaspas, at which period he is said to have been only thirty years of age (Hycl., p. 580, on the authority of the Orientalists). His having secured himself from the society of men for a great number of years is a fact corroborated by many independent authorities. It was his retirement that the will of the Supreme Being was known to him, and as this portion of Zoraster's life—one upon which the Parsees rest most of the evidence of the truth of his divine mission, we shall relate it here.

Zoraster's journey to the mountain Elbroos is by Parsee authors invariably called the prophet's journey, heaven, where he received his instructions from the (e. g. the Zend-Avesta and the sacred fire). He says, "I went to Zerdusht-nama, and I saw the sun, and with his head covered by a veil, appre- before Zoraster, by the command of Ozmaid, said, 'Who art thou? What dost thou want?' Zer- answered, 'I seek only what is agreeable to Ozma And be pleased with me. O Thou, who are pure, show me the way of law.' These words pleased Behanam. 'Rise,' said, 'to go before God; there thou shalt receive the same thing.' Zoraster rose and followed Behanam, said, 'Shut thine eyes, and walk swiftly.' When Zor- opened his eyes, he saw the glory of heaven; then came to meet him, and with them he approached the person to whom he addressed his prayer. From this in- cluded, he undertook to spread the teachings of the following instructions: Ozmaid himself said: Latter, 'Teach the nations that my light is hidden; all that shines. Whenever you turn your face towards light, and you follow my command, Aryan days will be supplied, after the ruin; and he said: 'The people superior to light.' He then bade him to book Avesta with the injunction to declare it before Gushaspas Behanam, the Amashapendar presiding over the surrendered his office to Zoraster, and gave him his pow- as the king of Shahrvar, and add as follows: 'The kingdom of Khordad, and Amirs followed the example of the Zoroastrians and returned to the world to overthrow false doctrines which were upheld by magicians and brought misery upon mankind.

When beholding the glory of the author of the life of Zoraster, was evidently invented for the purpose of filling up the chasm which the twenty years of the life of Zoraster, would have left.

Zoraster first saw Gushaspas at Balkh, and he saw this province to become a reservoir of the powerful sect of the Parsees. The Zinat-al-Tawarikh states that Ahdar son of Gushaspas, was the first convert of Zoraster, that his father was persuaded by the eloquence of the Zoroastrians. Behanam, that Zoraster said had been revealed to him free to spread rapidly in the province of Azerbaijan (i.e. the fire). Guaspas introduced it into every part of it and nations, and ordered 12,000 cow-hides to be tanned for it. These parchments were deposited in a vault near a rock in Persia.

The appointed holy men for them; and it was commanded that the profane should keep at a distance from the sacred book (Matras). The powerful protection of the king enabled Zoraster to introduce his doctrine farther than the kingdom where he heard of his Chahans, and that at the second son of Gushaspas, was sent by him to be announced in order to propagate his religion. He did to gain proselytes in India, and succeeded in converting a learned Brahmin (Tehengrighatcheh, according to quetil. vol. i., c. 2. p. 70), who went back into his own country with a great number of priests. Temple of this order and erected in all parts of the end of the expense of Guaspas, whose zeal in imitating the Zend-Avesta not only on his own subjects, but as those of the neighbouring monarchs, at last engaged in a war with Arjasp, king of Turan. He entered into a treaty or alliance with the Persians and attacked all parties of the enemy, the expense of Guaspas, whose zeal in imitating the Zend-Avesta not only on his own subjects, but as those of the neighbouring monarchs, at last engaged in a war with Arjasp, king of Turan.

The whole history of Zoraster, when divided into
traneous matter, can be reduced to the following statement:—The ancient religion which Djamahid had established, can have become merely traditional as lost its influence over the nation; new sects had sprung up in every direction; Hindus and Chaldeans were endeavouring to introduce their own religion, when Zoroaster appeared. It is evident that the worship of elements had been extinguished by Zoroastrian Code, and earned his great reform in the adjacent empire; he therefore seems to have restored the religion of his ancestors to a state of greater purity and adapted it to the exigencies of a new age after the fall of the empire.

What we have said hitherto rests entirely on the authority of Eastern authors—it has no claim to historical accuracy; but it contains more than can be gathered from classical writers. The Life of Zoroaster, prefixed to Anquetil du Perron's Zendavesta, is compendium of all the earlier and more complete histories which have been invented about Zoroaster.

From the different dates assigned to Zoroaster by Greek and Latin authors, many modern authors were led to believe that there were no less than six men of that name; but this opinion has been satisfactorily refuted by Hyde, in his 'Veterum Persarum et Magorum Religionis Historia,' and lately by Pastoret, in his 'Zoroastre, Confucius, et Mahomet comparés.' For an ingenious endeavours to prove that there was only one Zoroaster, compare to Stanley's 'Historia Philosophica,' (Dublin, Sec. i., c. 2); and to Bryant's 'Analysis of Ancient Mythology,' vol. ii., p. 388, where almost all the passages that can be found in antient authors relating to Zoroaster are very considerably.

Again, there were writers who identified Zoroaster with Moses, among whom Huet is the most prominent (Demonstratio Evangelica, Prop. iv., c. 5); others again have supposed that Zoroaster was born in Palestine, or that he perished after a shorter period. He is considered by many as an ancient prophet and earned his substance by becoming a servant to a Jewish prophet (Hyde, p. 316). Abul-Faraj states this prophet to have been Eljah, Hyde thought he was Esdras, while Prideaux conjectures that Zoroaster had been servant to Ezekiel. It is even possible to identify the Zoroaster of Persarum, Aramath, and Zoroaster of the Zendavesta, but this would be rather vain and useless. There was only one Zoroaster or Zendusht, who lived in the time of Goustasp and effected a great reform.

The leading doctrines propagated by Zoroaster were the following:—He taught that God existed from all eternity, and was like infinity of time and space. There were two principles in the universe—good and evil; he one was termed Ormuzd, or the good principle, the other Ahura Mazda, or the evil principle. Each of these had the power of creation, but that over was exercised with opposite designs; and it was from their united action that an admixture of good and evil was found in every created thing. The angels of Ormuzd protected the human race, and the human race, which the infernal agents of Ariman—destroy. But the power of good alone, the great Ormuzd, was eternal, and must therefore ultimately prevail; light was the type of the good spirit, darkness of the evil spirit; and, as stated above, God said to Zoroaster, 'My light is concealed under all that shines.' Hence the despair of that prophet, when he performs his devotions in a simple, turns towards the sacred fire that burns upon its altar; and when in the open air, towards the sun, the obelisk of all lights, and by which God sheds his ivine influence over the whole and perpetuates the works of his creature. (Armanes.)

Zoroaster, we are told, was a great and good man; and the counteract of Porphyry, that Darius was so proud of having been initiated into the mysteries of the art by Zoroaster himself, that he ordered it to be incribed on his tomb. After the death of the religion he introduced was disturbed by a thousand sects; many reforms were introduced: but they gradually sank to a mere idolatrous worship of the fire and the sun; the worshippers were persecuted when dohomanians rulers had possessed themselves of Iran; but the refraction of the sects, the sawing of the elements, the seeing of the fire, and settled in Guzerat, where they are to this day, but greatly diminished in number.

Hyc. 'Veterum Persarum et Magorum Religionis Historia, Oxford, 1780; Anquetil du Perron, Zendavesta, Paris, 1771; Pastore, Zoroastre, Confucius, et Mahomet comparés; Malcolm's History of Persia; Bayle, Diction. Historique, has a long and curious article on Zoroaster.)

ZOSIMUS (Zosimos), a Greek historian of the time of Theodnius the younger (a.d. 408-450). He is described by Photius (Bibl. Cod., 98) as ευνούχος καὶ ἀτές φησινόνοχος; (comes et excedavatus fisci), and was perhaps a son of Zosimus, the prefect of Euporius, who is mentioned in the Chronicle of the Euporians. Zosimus was the author of a historical work still extant (τορογια οριστοιον), in six books, which 'appears to have been produced in the year a.d. 437,' (v. 27) mentions an occurrence which happened in that year. It is joint with the history of Augustus, and after having given in the first book a sketch of the history of the emperors down to the end of Diocletian's reign, a.d. 305, the author devotes the remaining five books to a more detailed history of the Roman empire down to the year a.d. 406, when Rome was besieged by Alaric a second time, and Attalus was declared emperor. Zosimus seems to have been pretty well acquainted with the earlier writers on Roman history. Photius says that his work was a mere compilation from the chronicle of Eunapius, who however is not mentioned by Zosimus. He also used the works of Deyxippus and Olympiodorus, from the latter of whom he has copied the history of the Persian wars. As Deyxippus did not examine the credibility of his source, his own work is however of no importance. It is possible that Zosimus might have access to the Greek text, with the translation of Leucius (though the translator's name is not mentioned) that of H. Stephens, Lyon, 1581, 410. In this edition Zosimus is printed with Herodian. Zosimus is also contained in Pr. Syenses, 'Romaneae Historiae Scriptores Graeci, Frankfurt, 1501, fol.: this was followed by two separate editions of Zosimus, the one by Ch. Olearius (Zelir, 1579, 8vo., reprinted at Aens, 1714, 8vo.), and the other by Thomas Smith (Oxford, 1614, 8vo.). The ordinary text of Zosimus is that of Reitmeier (Leipzig, 1784, 8vo., with a valuable introduction, notes, and commentary), and of Emmanuel Becker (Bonn, 1837, 8vo.). There is an English translation, under the title of 'The New History of Count Zosimus,' &c., London, 1684, 8vo.


ZOSIMUS, a native of Greece, succeeded Innocent I. as Bishop of Rome, a.d. 417, under the reign of Honorius, Emperor of the West. At that time Pelagius and his friend Celestius were disseminating in the west their peculiar doctrines about the merit of good works and the freedom of man from sin. [Peluagianism.] Zosimus appears at first to have been captivated by the eloquence of Celestius, who was a ready and subtle speaker, and to be zealous for pious works. But the tenets of Celestius were soon after condemned by the council of Carthage, a.d. 418, and Zosimus confirmed the sentence of heresy against the Pelagians. A dispute about jurisdiction between Pope Pelagius and the Bishop of Vienne, Zosimus supported the bishop of Arles, but the other bishops of Gaul did not submit to his decision. Zosimus encouraged appeals from the bishops to the see of Rome. His letters on the Gaulish and Pelagian controversy are preserved in Constant's 'Epistulae Romanorum Pontificum,' Zosimus died in December, 418. (Muratori, Annales d'Italia, and the Church Historians.)

ZOSTEROPS, the name given by Dr. Horfield and Mr. Vigers to a genus of Insessal or Perching Birds, Vol. XXVI.—5 M.
placed by Mr. Swainson in his subfamily Pardalinae or Tameera in his family Sylviidae.

Generic Character.—Bill rather stouter than in Sylviola, acutely conic, almost entire. Rictus smooth. Wings moderate, pointed; the first quill rather shorter than the three next. Tail as in Sylleridae. Feet strong. Tarsus longer than the middle toe; Lateral toes unequal. Eyes encircled with compact white feathers. (Sw.)

Geographical Distribution.—India, Africa, America, Australia.

Example.—Zosterops flavus (Sw.), Yellow White-Eye.

Mr. Swainson, in his Birds of Western Africa, observes that the species of this genus are all of small size, and nearly intermediate in their affinities between the Warblers and Titmice. He states his belief that only one species is found in the New World; the others, about twelve in number, being restricted to the warm latitudes of Asia, Africa, and Australia. One of these, Zosterops curvirostris, Sw. (Dicran chloronotus of the Paris Museum), has, he remarks, the bill nearly as much curved as some of the honey-suckers.

Mr. Swainson adds that the general plumage of all those liliethro discovered is green above and yellowish beneath; so that the species, otherwise well marked, possesses a strong mutual resemblance in the general cast of their colours. He thus describes Zosterops flavus:

Size of Zosterops doratus, an Australian species, but the bill, which is black, is larger. The upper plumage is of a bright greenish yellow, the under pure and bright yellow, uniform in all its parts. The quills and tail are blackish, edged with yellow: the snow-white ring round the eye is very conspicuous, and it is connected to the base of the bill by a deep black line; the tail, although divided, is even, and the bill and feet blackish. Total length 4 inches. (Sw.)

Locality.—General.

ZOUCH, RICHARD, an eminent English civilian, was born about 1500. He was educated on the free foundation of Winchester school; elected to New College, Oxford, in 1567, and chosen fellow in 1590. He took the degree of Bachelor of Civil Law in June, 1541, and was admitted at Doctors' Commons in January, 1548. In April, 1549, he commenced LL.D., and was appointed Regius Professor of Law at Oxford in 1623. He represented his native county as one of the delegates in the cause of Don Panteleon de Sta, brother of the Portuguese ambassador, who was tried and executed in 1553, for the murder of an English gentleman. At the Restoration he was reinstated as judge of the Admiralty, and nominated a commissioner for regulating the University. He died soon after at his apartments in Doctors' Commons, on the 1st of March, 1681.


11. 'The Jurisdiction of the Admiralty Court asserted against Sir Edward Coke's Article Admirallitas, in the 22nd chapter of his Jurisdiction of Courts,' London, 1663, 8vo.; a poem of 14 stanzas. 15, 16. 'Species questionum juris civilis,' Oxford, 1683, 4to, has been attributed to Zouch. (Biographia Britannica.)

ZOUCH, THOMAS, an English divine, was born near Durham in 1702; entered Lincoln's Inn, and was called to the Bar in 1726. He was a member of Emmanuel College, Cambridge, in 1757. In 1760 he was elected one of Lord Craven's scholarships. He was chosen fellow of his college, and appointed assistant tutor in 1763, the state of his health obliging him to leave the University in 1767. In 1770, he was made a Fellow of New College, Oxford, and appointed deputy-commissary of the archdeaconry of Romney, and in 1793 chaplain to the Master of the Rolls and rector of Selsey. At the death of his elder brother, Rev. Henry Zouch, a year or two before, he assumed the name of Sandal, where he continued to reside till his death. In 1797, he was called to the second prebend in the chapter of Durham. The see of Carlisle was offered to him in 1798, but he declined it on account of his advanced age.

He died on the 17th of December, 1827, at the age of 77. He was an elegant classical scholar, and possessed considerable acquirements in botany. Besides several occasional courses, he published 'An inquiry into the Prophetical Character of the Romans, as described in Daniel,' 2to., 1792, and 'An account of the Prophecies of the Old and New Testament,' 1804. He also published some biographical works:—1. 'Memoir of Sir Robert Southey, Bart.,' 1796, 8vo. 2. 'Memoirs of the Life of the Right Honourable D., Lord Durham,' 1808, 4to.; and an edition of 'Inns of Court Lives,' with additions. (Gentlemen's Magazine, Vol. xxxi. Annual Register, vol. vi.)

ZOUZ, GERARD, called sometimes Sowor and Sonor, was a German portrait-painter of great ability, who established himself in England, and was one of Ley's rivals for the reign of Charles II. He was born in Westphalia in 1637, but the year in which he came to England is not known. Bickardon, in his 'English School,' says he came to this country about the year 1654, and found an engagement suitable to his merit. 'His portraits of men,' he continues, 'are admirable, having in them a just, bold, and good colouring; but he did not always execute with a due regard to grace in women's faces; which is not so much due to his talent, as to the weakness of his brush, which was not firm enough to execute with perfect beauty, in which his country did not greatly abound.' What we are most indebted to him for is a portrait of Mr. Riley, Walpole says of Zouz:—'By all that have seen of his hand, it is said that he had a man of singular temper, and was much displeased at Ley's female portraits being preferred to his. He was slovenly in his dress, and he often opened his house-door in Catterick's Alley or Holborn by himself, and if he did not like the look of his visitor, he used to say that his master we
not at home. Walpole mentions several portraits by him, among them a fine head of Logan, the engraver, one of Sir F. Throckmorton, and an excellent one of a gentleman in a dappled gown, on the back of which is written the picture of the picture and frame: the picture 36, and the frame 16. His draperies were frequently of satin, in which he imitated the manner of Terburgh. He died in 1681, aged 44.

ZUCCHARELLI, or ZUCCHERELLI, FRANCESCO, a distinguished Italian landscape-painter, born at Pittigliano, near Florence, in 1702. He first studied drawing-painting, but he eventually decided upon following landscape-painting, in which his first instructor was Paolo Anesti, at Florence. He afterwards went to Rome and continued his studies with Monanni, and lastly with Pietro Nelli. Zuccarelli established himself at Venice, but he acquired in time, through Smith's prints, after his works, so great a reputation in England, that he was induced to visit this country in 1768, as his ambassador, and was so much; to satisfy the most sanguine expectations. At the institution of the Royal Academy in 1768 he was elected one of the members, and is accordingly one of those who are considered its founders. Several of his pictures have been engraved by Vizares. "The frames are painted by himself; and 'tis has been remarked," says Edwards, "that among the figures which he introduced in his landscapes, he frequently represented one with a gourd-bottle at his wrist, is often seen in Italy. This is said to have been done intentionally, as a sort of pun on his own name, Zucco being the Italian word for gourd.

In 1770 Zuccarelli painted a set of designs for tapestries, which were executed by the king's tapestry-weaver, Paul Saunders, for the Earl of Egremont's house in Piccadilly. He painted many creditable pictures in England, but they are generally very inferior to those he painted in Venice, and to which he was indebted for his reputation and the fortune he made in this country. His later works are cold in colouring, want harmony, and are artificial in their composition; there are some specimens at Hampton Court. Zuccarelli, however, in his time, reigned over the public taste in England; and the chief cause of Wilson's want of success was because he did not imitate him.
In 1773 he returned to Florence, and he gave up painting, having resolved to pass the remainder of his life in quiet retirement by the super, illusion however by the emperor of Austria of a monastery, on the security of which he had advanced money, deprived him of his property. This misfortune compelled him to assume the pencil, and he found sufficient employment from the English gentlemen who visited Florence, where he continued to paint until his death in 1788. He etched some plates after Andrea del Sarto.

(Lanzi, Storia Pictorica, etc.; Edwards, Anecdotes of Painting, etc.)

TADEO, and FEDERIGO, two celebrated Italian historical painters, were the sons of Ottaviano Zucaro, an obscure painter, and were born at S. Angelo in Vado; Taddeo in 1529. He studied first with Pompeo da Fano, and afterwards with Giacalone da Fiesole, and went early to Rome, where he remained alone for some time. When he arrived there, he found himself friendless and houseless, and he was forced to seek employment as a colour grinder, but in this way he added little to his means, and he was for some time comparatively destitute. He painted several pictures in the churches of Rome, among the ancient ruins, or under the porches of the modern palaces or churches; and after much perseverance he was at last compelled by excessive privation to return to his father's house, there to recruit his shattered constitution. During his absence Vasari, he had been living upon his youth: but during all this period he let pass no opportunity that occurred of improving himself in drawing. As soon as he had recovered his strength, he returned with renewed courage to Rome, and this time his exertions met with little success. He painted the portrait of Daniello da Parma, who had painted some years with Correggio and Parmigianino, and who took Taddeo with him to Alvito near Sora, where he was about to paint a chapel in that town. He painted the portrait of Queen Elizabeth, and that of Mary Queen of Scots, which is at Chawick, and which Vertue engraved. He painted a second portrait of Elizabeth in a sort of Persian dress, which is or was in the palace at Kennington, in Surrey. He was also engaged in illustrating a book of poems by Sir Richard Woburn, and painted a portrait of the poet, which was later in the Palazzo Lante: there is an engraving of it by Cornelius Cat; it is one of Federigo's best works.

Federigo painted likewise the portrait of Sir Nicholas Bacon at Woburn, and those of Charles Howard, earl of Nottingham, lord high admiral; and Elizabeth's first pastor, now at Hampton Court. Walpole had a portrait of Sir Francis Walsingham by him.

He died at Dresden, where he was soiled and feverish; he was soon forgiven and recalled by the pope, and he returned to Rome and finished the ceiling of the Pauln. At the end of 1585, after the accession of Sixtus V. to the papal chair, Zucaro was invited by Philip II. to Spain to paint the Escorial, with a salary of a thousand ducats. He arrived at Madrid in January, 1586, and he was occupied in the Escorial nearly three years, during which time he painted several works in oil and in fresco, some of which however were immediately afterwards removed or destroyed. In 1590 and 1591 he returned to Rome at the end of 1588. In 1595 he founded the Academy of St. Luke there, for which a charter had been granted by Gregory XIII., and it was confirmed by Sixtus V.; he was the first president. He wrote a book on the principles of painting, sculpture, and architecture, entitled L'idea di Pitori, Scultori, e Architetti, and printed it in 1603 at Turin, with a dedication to the Duke of Savoy. He published two other works at Bologna in 1592; one of which Taddeo had left unfinished. He died in 1603. He was a great master, had great ability as a painter: he was also sculptor, poet, and architect, and he is said to have owed his success chiefly to his general accomplishments and
the lake, from Zug to Arth in the canton of Schwyz has been recently completed, and the town of Zug paid 30,000 florins for its share of the expenses. Zug has a gymnasia for four professors, and an institution for female education directed by nuns.

The other towns of the canton are:—1. Baar, about three miles north of Zug, on the road to Zurich; it has a town-house, a public school, a paper-mill, and about 2000 inhabitants. 2. Cham, at the northern extremity of the lake, on the road from Zug to Lucern, has about 1000 inhabitants. 3. Menzingen, and about 2200 inhabitants. On the neighbouring hill of Gubel is a paper-mill and a representation of the defeat of the Protestants by the Roman Catholics in 1531, during the religious wars which followed the Reformation in Switzerland.

The constitution of the canton of Zug is a representative democracy. The people assemble in May every year in their respective communes, and appoint the members of the landrath, or legislative body, consisting of 162 members, who sit for one year, but are re-eligible. The canton is divided into six judicial districts or administrative departments; the whole canton is divided into 19 cantonal districts, and into 243 communes. The canton is divided into 6 sections, each of which contains a cantonal assembly. The criminal court is composed of 25 members taken from the commune. There is also a civil court for the whole canton, and inferior courts in every commune. Fornication is reckoned among other punishable misdemeanours. In all these small democracies the number of public functionaries is multiplied to an extent which seems to be an evil cut-off. For instead of making 500 the number of the population, which is done in order that all the citizens may in turn enjoy a brief period of power. The public revenue is supplied by both direct and indirect taxation.

The canton of Zug has kept itself one of the quietest among the political disturbances of Switzerland of the last half a century.

(Lesecche, Dictionnaire Géographique Statistique de la Suisse; Francini, Statistica della Svezia.)


domestic attractions; he was the most fortunate painter, perhaps, of his time. Lanzi criticizes his writings; terms them bombastic and pedantic, and says that instead of instruction they present a mere tissue of sterile and undigested speculations, and that one page of Vasari is worth more than all that Zucaro wrote.

(Vasari, Vite de Peintres, Sculpteurs, Vite de Pittori, c.; Walpole, Anecdotes of Painting, &c.; Lanzi, Storia Pict. &c.; Cen Bernuex, Dictionnaire Historico, &c.)

ZUCCHI, ANTONIO, an Italian painter, born at Venice in 1726. His father, Francesco Zucchi, was an engraver, and his mother, the daughter of Lewis, an Italian scientist, had been a pupil of Bernoulli; she learned painting under F. Fontebasso and J. Amigoni, obert Adam, the architect, when in Italy, engaged Zucchi to make drawings for him; and Zucchi travelled with him in the north of Europe. He accompanied him to this country, where he was much employed by Mr. Adam in the small fresco and painting:

He painted mythological subjects, ruins, and natures; his colouring was pleasing, but his style was periphrastic and merely ornamental. He executed some of the best classical compositions on the subject of the triumphs of the Empress Caterina, done in the year 1745, for the Emperor of Austria. He was twice married, and had three children.

ZUG, THE CANTON OF, one of the smallest cantons of the Swiss Confederation, is situated nearly in the north of the canton of Zurich, on the east and south by Schwyz, and on the west by Luzern and Aargau. It is about 14 miles long from east to west, and about 10 miles in its greatest width. It lies in the basin of the river Reuss, an affluent of the Aare, and its waters flow in a northern direction. The principal part of the lake of Zug occupies the centre of the canton; the southern part is in the territory of Schwyz.

The lake is a fine piece of water, about eight miles long, and between one and two miles wide, surrounded by high mountains, some districts of which, like a continuous orchard. There are also fine meadows, and the horned cattle are remarkably large and fine. Wine is made in several localities. The principal articles of exportation are dried fruit, kirsch-wasser, herring, and dried fish, and some of the vineyards have been converted into pasture-ground.

The origin of the lake of Zug is traced to the small lake of Ageri, which is separated by a mountain ridge from the lake of Zug, is surrounded by sand-hills, and has in its basin small hills, which are partly covered with woods.

The lake of Zug forms a large plain, between 25° and 28° 30' N. lat., and between 4° 15' and 8° E. long., and covers about 12,000 square miles, or about twice the extent of the county of York. Near the middle it is narrowed by a projecting peninsula, on the east point of which the town of Zug is built, which extends about 20 miles north, and is the seat of the cantonal library. The arsenal of Zug contains, among other curiosities, the banner of the canton, stained with the blood of the fallen, and supposed to have been taken at the battle of Bellinzona, fighting against the Milanese, in 1422.
shoals, and is called the Pampus. Not far from its western extremity the Y is joined from the south by a narrow river, the Sauce, which is the short channel by which the lake of Haarlem discharges its waters into the inlet.

[Haarlem, vol. xi, p. 520.]

The shores of the Zuider Zee are generally low. On its eastern side they are well defined, and on the south-east, in the part of it which is adjacent to the Gelderian frontier, is several feet of land above the level of the sea. But the western shores are very low, so that a great portion of the adjacent countries is defended from the encroachments of the sea by dikes. Along the eastern shores the sea has sufficient depth for vessels of moderate size, and in general is a fair port for large vessels. But along the western shores several shoals occur, the most extensive of which are near the Texel and at the entrance of the Y; and at low tides there is so little water in them, that the larger merchantmen were formerly obliged to discharge their cargoes outside before they could sail to Amsterdam. To obviate this disadvantage the North, or Helder Canal has been made, which begins at the Mars Diep, in the strait which divides Texel from the Helder. Near the village called the Helder a new breakwater, 1200 yards long, has been built, and is so extensive, and deep enough to allow ships of 600 tons burthen to lie close to the quays even in the greatest storms. The Helder Canal begins at this place, and extends southward to Alkmaar. A few miles south of Alkmaar it turns sharply to the west, and passes to the town of Amsterdam, which is about 7 miles southward to the Y, in which it terminates opposite the town of Amsterdam. This canal is capable of receiving the largest merchant-vessels, and the locks are so wide that ships of the line of 74 guns can pass. It is about 15 miles long, 220 feet deep, and the great work was begun in 1819, and completed in 1833.

According to the most antient accounts of three parts of Europe, which are derived from the Roman writers, the Zuider Zee did not exist, but its place was occupied by a low swampy marsh drained by the river Yssel. This river was not then, as it is now, considered an arm of the Rhine. But after the Roman general Claudius Draus, about twelve years before the Christian era, had caused a canal to be made from the Rhine to the Yssel, the depth of the water brought down by the Rhine was discharged by this canal into the Yssel. It does not appear that this change in the course of the rivers materially affected the low countries drained by the Yssel, as no change is recorded before the beginning of the thirteenth century. But in 1210 a great portion of the low country was inundated by the sea, after continued north-western gales, which broke down the dikes by which it was protected against the water. Before the inhabitants were able to repair the dikes the Franklin, one of the greatest towns which were still newer attacks of the sea, after the sea had retired, new inundations took place, which washed away the soft soil with which the country was covered, and rendered it impossible to do anything for the protection of those tracts which had been newly given to the sea. And the country has not been reclaimed since the year 1282, and gave to the Zuider Zee the form and depth which it still preserves.

Zurich is a Prussian town in the government of Frankfort and province of Brandenburg, situated in 52° 0' N. lat., and 13° 40' E. long., in a fertile plain at the distance of two miles and a half from the Oder, and 110 miles from Berlin. It is surrounded with a rampart and a moat, and has outside of the town a citadel, which is surrounded with its own wall and ditch. The town is well timbered, which is more the cause of the town. The public buildings and institutions are, one Lutheran and one Calvinist church, an orphan asylum, a school founded in 1710 by Sigismund Heinrich, a needle-maker; a royal school called the Paedagogium for children to many students. The number of inhabitants is about 5000, who have manufactories of wooden cloths, linen, dimity, stockings, hats, leather, starch, and powder: there are tanneries, breweries, brandy-distilleries, and vinegar-manufactory. The trade of this town is very considerable. It is particularly the inhabitants who produce very considerable quantities of fruit and hops, and at the distance of a league from the town have plantations, in a good soil and warm situation, 70 vineyards, which are the most northerly in Germany. The number of those flourishing in Northern Germany, the monks extended the cultivation of the vine to Bodelschwein and Schwerin, on the shores of the lakes; but these vineyards were abandoned when the monasteries disappeared.

[Geiler, Lehrbuch der Physiographie, Appendix, W. A. von Schlieben, Neueste Genieblize der Französischen Monarchie; Johann Hübner, Zeitungs Lexicon; Neues Geographisches Lexicon.)

ZUMBO, GAETANO GIULIO, a celebrated Italian artist, distinguished himself for his noble and coloured wax: he is said to have made a copy of the last Judgment by Michael Angelo in wax.

(Fiorillo, Geschicht der Malerey, vol. i.)

ZURBARAN, FRANCISCO, a very celebrated Spanish painter, was born at Seville, November 9th, 1598; he is called the Spanish Caravaggio. His parents, who were of the labouring class, soon were covered in young Francisco an ability to excel in painting, and they accordingly sent him to Seville to study. Juan de Rojas, Z. he made, WINAPI paintings under Mr. Zumbo. He made another great masterpiece, called "Zurbaran," which consists of a group of five figures in high relief, shewing various stages of decomposition of the human body after death. At one corner of this work he has put his portrait and inscribed under it his name as follows: "Juan de Rojas, Z. He made, WITH his own hand, this work."

Zurbaran's works are very numerous at Seville; there are several at Cordova and Guadalajara, and some at Castello and Penaranda. Out of Spain they are very few.
common, but Marshal Soult brought away some, and others have been sold and removed more recently. In the Spanish Museum in the Louvre there is a room devoted chiefly to the works of Zurbaran; there are in it, according to the catalogue, 91 pictures by him, but many of them are very indifferent. The sales force reached the Duke of Sutherland has a good specimen of his style. His works have as much nature and power as those of Caravage, and less vulgarity. The pictures from the life of San Pedro Nolasco at the Merced Calanda at Seville, though one of Zurbaran's earliest works, are among his best, they are remarkable for the skill with which he has managed he white draperies of the monastics.

(Cecco Bermudex. Diccionario Historico, etc. Koloff. Beschreibung der koniglichen Museen, etc. zu Paris.)

ZURICH, one of the large cantons of the Swiss Confederation, is bounded on the north partly by the canton of Schaffhausen, and partly by the grand-duchy of Baden, in the east by Thurgau and St. Gall; on the south by schwyz and Züg; and on the west by Aargau. The territory of Zürich lies in the basin of the Rhine, all its water courses flowing northwards into that river. The area of the canton is reckoned by Meyer of Knau of 32 German square miles, or about 764 English square miles. The population in 1837 was 231,571. There are almost no mountains, and the interior is more like a great valley, divided by brinks running perpendicular to the principal rivers of the canton, the Thur, the To se, the Stall, and the Limmat. The lake of Zürich, the eastern extremity of the cantons of Schwyz and St. Gall, is long and narrow; it runs through the middle of the canton, extending for about 25 miles from south to north-west; its breadth measures from one to two miles. The banks are strewn with thriving small towns and villages, especially on the side of Zürich; and the surrounding country, rising in gentle lopes on both sides, is planted with vineyards and orchards, interspersed with fields, exhibiting a most animated landscape, which contrasts with the distant view of the towers and ornamented walls of Zürich. There is a rapid clear stream, issues out of the lake at its north-east extremity, intersects the town of Zürich, and is joined by the Sihl, a river coming from the south, which has its source in the canton of Schwyz.

Agriculture is diligently attended to in the canton of Zürich, and the value of manure is well understood. The principal products are—corn, wine, fruit, and pulses. The wine is mostly white, and generally of an inferior kind, but in a few places it is grown on the same scale as the wine of Jura, Vaud, Neuchâtel, and Meillon, and the light coloured wine of Teufen, are as good as any in Switzerland. The corned cattle amounted, in 1836, to about 47,000 head; sheep to 33,000 head, only, besides 5500 goats. Considerable parts of the forested hills are prepared with forests, and some to the state, and some to the communists or to corporations.

More than one-eighth of the population of the canton is occupied in manufactures. The cotton and silk manufactures are by far the most important; they have been noticed under Switzerland (Trade and Manufactures). Zürich arises on an active trade, especially with Italy, and it contains several highly respectable mercantile and banking concerns.

Two dialects of the German Swiss are commonly spoken in the canton of Zürich; the written language is the high German, and is spoken by educated persons. The religion of the country, recognised as such by the constitution, is the Roman Catholic, established by Charlemburg and Augsburg. The number of the clergy is nearly 300, of whom 143 are incumbents of parishes. About 2000 Roman Catholics are scattered about various districts of the canton; they have a Benedictine convent at Rheinau on the Rhine; and a Benedictine convent at Rheinau on the Rhine.

The public revenue of the canton of Zürich amounts to between 1,100,000 and 1,200,000 Swiss livres. The Swiss army is worth one-half more than the French fleet, or fifteen pension sterling. The revenue is derived chiefly from the customs, the tax on property, the rents of land belonging to the state, and on post-office and other items. The expenditure is distributed under the following heads:—Civile administration, 178,000 Swiss livres; police, 95,490 livres; military, 122,000 livres; public worship or church, 182,154 livres; public instruction, 185,490 livres; roads and public buildings, 360,000 livres. There is a body of permanent gendarmerie composed of 108 men, chiefly that of the town of Zürich. The militia, which is the national force, consisting of all the men from 19 to 40 years of age, is organised after the same manner as in the other cantons of Switzerland. The contingent or select militia, which is made up every year of about 5000 men; the landwehr, which is next liable to take the field in case of emergency, is about the same number. By the actual constitution, which was sanctioned by the great majority of the people in 1831, and was afterwards revised in 1837, the canton of Zürich is a representative democracy; all citizens who have attained twenty years of age enjoy the elective franchise, except bankruptcy, parricidal, and immoral, and those who labour under an interdict. The canton is divided into 65 electoral circles, of which 18 are for the town of Zürich, and 62 for the country. The electoral circles return one deputy for every 1200 inhabitants. The Great Council or Legislature consists of 242 members, who must be at least 30 years of age, and of thirty-three are chosen by the Great Council itself to complete its number. By the constitution Zürich returns a greater proportion of deputies relatively to its population than the country districts, and this is the case in most of the larger cantons of Switzerland, where the chief amount of income is in the hands of the head town. The deputies are elected for years. The Council appoints the Executive Council, which consists of 19 men for six years, and is presided over by the burgemeister. The Great Council appoints also the members of the court of justice, consisting of 12 men, and those of the ecclesiastical council, which superintends the administration of the church, and is formed both of clerical and lay members. Besides the ecclesiastical council there is a synod or assembly of the clergy, which constitutes the supreme authority for spiritual and temporal matters, which meets at least once a year, and is presided over by the antistes or head pastor of the church of Zürich. The canton is divided for administrative purposes into eleven districts, having each its council for local purposes, whereof 13 or administrative Zürich and 62 for the country. The use of torture was abolished at Zürich by law in 1831.

Zürich, the head town of the canton, is pleasantly situated at the north-west extremity of the canton, and by the river Limmat into nearly equal parts; of which the one on the right bank is called the Grosser Stadt, and the other the Kleine Stadt. The Grosser Stadt is built on the slope of a hill called the Zürichberg; the Kleine Stadt lies on more even ground between the Limmat and the Sihl, just above the confluence of the two rivers. Both towns are surrounded by ramparts and ditches, with bastions and ravelins, but the works, being commande by the neighbouring heights, have been lately ordered to be converted into mostly narrow streets; the houses high, massive, and ancient looking, and the general appearance is that of a town of the Middle Ages. There are however some modern and handsome constructions, especially in the Kleine Stadt. The minister, or cathedrall, is the most striking object, and the towers is called the tower of Charlemagne, for it is said that that sovereign, during his German expeditions, resided some time in this spot, which was then beginning to be inhabited under the name of Zürich-Tor. The two remarkable buildings of Zürich are—the Frauenmünster, once a nunnery, built in the sixteenth century; the Prediger church; the church of St. Peter, with its handsome tower and clock; the town house; the orphan asy1um; the Wasserkirche, with the town library annexed to it; the new university; the Casino, or assembly-rooms; the Wollenberg tower and dungeon, in a small island in the middle of the river, where state prisoners were formerly confined; the arsenal; and the new police and guard house. The principal promenades are the Lindenhof, in the Gross
ZURITA, GERO NYMO, a distinguished Spanish historian, was born at Saragossa, on the 4th of December 1512. He studied at Alcala, under Hernan Nunez; in 1530 he was appointed chief of the municipalities. After a period he succeeded his father-in-law, Juan Gazias de Olivan, as fiscal in Madrid. In 1543 he was admitted into the supreme council of Castile, and sent on a mission to Germany. On his return to his native country in 1548, he was appointed by the states of Aragon, 1570, 3. chronicle: the kingdom, the first who filled the office, then his institute.

The duties of this appointment appear to have engaged his whole time from 1560 to 1567. An ordinance issued in his favour by Philip II, to all the priory and abbeys of his dominions, enjoining them to open their archives and communicate their most secret papers to Zurita. Thus authorized, the Coronists travelled almost everywhere, and collected a great number of important documents.

In 1567 Zurita was appointed private secretary to the king. In 1568 the grand inquisitor intrusted to his charge all the correspondence of the holy office. Towards the end of his life he contributed a large number of works, and retired to the Hieronymite convent of Saragossa. The continuation of his Annals of Aragon was the occupation of his declining years. He died in his convent, on the 3rd of November, 1581. His books he bequeathed to the Catholic Church, and many of them were taken possession of for the Escorial library.

The works of Zurita are:—1. 'Annales de la Corona de Aragon,' Saragossa, 1502-79; 2. 'Indices rerum ab An- gnasiae Regibus gestarum ab initis regni ad annum 1148.' Saragossa, 1587; 3. 'Historia de la historia en el reyno de Aragon, que contiene en quatro libros varios successos desde el 1512, hasta el 1580.' Saragossa, 1580; 4. 'Emmiendas y Advertencias en las coronicas de los rey de Castula que escribo don Leon de Ayala,' Saragossa, 1683.

Botterweck and Holtinger have collected separately in terms of the writings of Zurita. By a lucid exposition of the connection of events he has succeeded in developing the growth of the Aragonese constitution.

Zurnapa, the Chronicle Alexandrinum,' published by Ducange among the Byzantine historians. Some grammatical notes of Zurita on the 'Commentaries of Caesar,' Claudian, and the 'Antonine Itinerary' are preserved in MS. in the libraries of the University of Tournai, the Bibliotheque de la Sociedad de las Americas.

ZURNAH, the Arabian name, according to Beel of the Giraffe, of which, as far as present research has gone, there appears to be but one living species; no satisfactory evidence having been brought forward to prove that the Giraffe of Nubia, Senegal, and the Cape are significantly different.

Fossil Giraffes. Since the article GIRAFFE was written some highly interesting additions to the history of the animal have presented themselves.

Dr. Falconer and Captain Captalley have discovered in the tertiary formations of the Himalayan range jaws and portions of upper and lower jaws associated with the remains of Camelus, Hippopotamus (Hyper- ProtoDino of Falconer and Captalley), Anoplotherium, Sinotherium, Mastodon, &c.

The species of Giraffe, found upon considerable portions of the jaws and teeth, is identical in size and configuration with the Giraffe of the Cape, with which it has been compared at the College of Surgeons in London.

The second species of Giraffe is one-third smaller than
the existing species, but has the same characteristic long
and slender neck, as is proved by the fossil cervicial ver-
tebre, which, with all the characters of maturity, differ
from the corresponding vertebrae in the African or existing
species, in being one-third smaller, and in some slight va-
riations of configuration.

The former supposition, due to the researches of these ac-
complished and zealous officers, of the extension of a genus
supposed to be peculiarly African to the continent of
India, in the case of the Sewalik Hippopotamus, is now
paralleled by the discovery of the associated Giraffes.
As far as we know, this one Hippopotamus, as far as we
know, has more than one Giraffe; but there existed at least two species of both these genera
during the ancient period when the conditions of the Sue-
cisses had not, as we know, the same peculiarities. The
contemporaneous Strathera, Mastodons, and other
gigantic forms of Mammalia dependent for their food upon
the rich and teeming vegetable produce of the soil. Hip-
opotamis require deep rivers for their safe and comfort-
able mode, and Giraffes are especially organized to sub-
exist on a peculiar natural family of trees—the Acacias, which
confine them to plains or regions of moderate elevation.
But the fossil remains to which we have called attention occur more than 5000 feet up the loftiest range of moun-
tains in the world. The stromata of the lizards, which have now become famous from the abundance of these fossils are now narrow and rapid, hastening to pour
themselves into some tributary to the Ganges, and must
long have lost those characters which adapted them for
the marshy and stagnant localities which have a peculiarly
characteristic of the present altitude of the soil, and could
as little yield subsistence to Giraffes. When therefore
these now peculiarly African types of gigantic herbivorous
mammals, and some of the closely allied, the giraffe,
characteristic of the geographical character of the land was such as to have afforded the requi-
ses of the Hippopotamus and the acacia-groves for the
Giraffes.

ZUTPHEN, situated in 52° 8' N., lat. and 6° 12' E.
long., is an inland town, in the province of Gelderland,
in the kingdom of the Netherlands. It lies on the right
bank of the Zwin, which is the source of the Yssel, and
is traversed by the Berkel, which divides it into the New
and the Old towns, and falls into the Yssel. There is also
an extensive suburb, with many gardens and country-
houses. It is strongly fortified, and the ramparts, which
are planted with trees, afford a pleasant public walk.
The principal public buildings are, the great church,
an antient stately edifice, St. Eusebius's church, containing
the tombs of several dukes of Gelderland, and two other
churches, including the magnificent collegiate church of
deputies, and the SGravenhof, or count's palace. There
is a Latin school, a society of architecture and
drawing, a school of art, and a society for the study
of the natural history. There are 11,000 inhabitants, who have a
lively commission with Germany and the neighbour-
ing countries. In the war with Philip II., king of Spain,
Zutphen was besieged in 1572 by the Spaniards, who took it
by storm, and committed the most frightful excesses. It was
again besieged in 1575, by the city of Ghent, in which the
great scholar, Philip Sydney, was killed. Near Zutphen is the beautiful
country-seat of the king of the Netherlands, called the
Loo.

(Hassel, Handbuch, vol. ix. (The Netherlands); Stein's
Handbuch, edited by Hörmelchmann; Cannabach, Lehr-
buch.)

ZWINGLI, or ULRICH ZWINGLI, the reformer
of Switzerland, was born at Wildhaus in the Tobggenburg,
in January, 1484. His father was a substantial farmer.
Zwinglei, however, was so entirely against all ecclesiastic
whence he went to study philosophy at Vienna; on his
return to Basle he went through his theological studies
under Thomas Wytttenbach. He was ordained priest and
said his first mass in 1506. He was then appointed to the
parish of Glarus, head town of the canton of that
name. He applied himself strenuously to the study of the
Scriptures in the Hebrew and Greek texts, and that of
the early fathers of the church. He appears to have been early
impressed with a notion that all was not right in the go-
vernment and discipline of the church as then established,
and he communicated his doubts by letters to several
learned men, with whom he was acquainted. His life was
pure and exemplary, and he was much beloved by his
flock for his sermons; he inculcated the practice of Gospel
morality, avoiding so much as possible to speak of
the intercourse of saints, of images and relics, and of fasts
and pilgrimages. He was also one of the first among the
military contingent of Glarus to the wars in Italy, in
which the Swiss were then taking an active part, as aux-
iliaries to one or the other of the belligerents. Zwinglei
went to Milan when the Stuart was in that city, but
in intrigues and bribes of Cardinal Schinner, refused to
rally the treaty of peace with France agreed upon by most
of the cantons, and marched out to attack the French army
under Trivulzio, more than double their strength. They
were defeated at Magdeburg, 27th of July, 1515, and the
15th of September, 1515, lost one-half of their number,
but at the same time so crippled the French that they
were allowed to retire unmolested with their artillery
and their wounded.

On his return to Switzerland, Zwinglei wrote some strong
remonstrances to the governments of the various cantons,
entreaty them to put a stop to the practice of foreign
enlistment, and not to allow the blood of their countrymen
to be wasted for quarrels not their own. After having
spent some time at the court of the Emperor, in 1516,
preacher to the monastery of Einsiedlen. There, in the
very sanctuary of devotion, practices, pilgrimages,
indulgences, and vow offerings, Zwinglei preached
more than that he had done at Glarus, and in every one
of those things, entreaty his audience to seek forgiveness
through the merits of the Saviour alone, and not through
the intercession of the Virgin and other saints, and to
consult the Scriptures as the only safe rule in matters
of faith with the emperor, the cantons, and the Abbey,
whom he had known in Italy, and he warmly represented
to him as well as to the Bishop of Constance the urgent
necessity of a reform in the discipline of the church,
entreaty them and their brother prelates to take
the books into their own hands and see for themselves,
and to judge for themselves; the eyes began to be opened to the astounding corruption around them, should lose all respect for the church, and
the whole social and religious world be thrown into an-
archy. At this time Zwingli had not yet seen the Consti-
This shows that the cause of populism did not originate with Luther alone, but commenced sim-
aneously in different countries, where minds similarly
were not only unacquainted with one another, felt a
common impulse from general circumstances and from what
they saw of the church. Zwingli and the emperor
in 1518 the traffic in indulgences spread to Switzer-
land. Bernardin Samson, a Franciscan friar of the con-
vent of Milan, was commissioned by his superiors to sell indul-
gences in Switzerland. Samson, a vulgar ignorant
man, in his eagerness for customers went beyond the lax not-
tions of the times, according to which most people believed that
indulgences remitted the guilt as well as the penalty
of past offences, a notion unwarranted by the councils or
by the divines of the Roman church. Samson told the Swiss
mediators that by purchasing indulgences to a certain
amount they might obtain a sort of privilege or immunity
for future sins which they might happen to commit.
Samson however was opposed by Zwingli, who wrote a
book at the church council of Louvain in 1517 and refused
the friar admittance, being supported in this by the
abbot, and especially by Theobald, Baron of Geroldseck,
who was the voge or economical administrator of the
abbey. Zwingli then preached to the assembled pilgrims,
the absurdity of the whole business, and especially the
shocking abuse of them which was being made, exposing
the mercenary object of the friar, and laying the blame
not on the heads of the church, but on their subordinate
agents. Even Fugger, vicar of the Bishop of Samson, and forbade him, under some allegation of
informality, to sell his indulgences within his diocese.
Bul-
linger, the rector of Bremgarten, and a friend of Zwingli,
refused Samson admiration to his church. The friar how-
ever reaped a good harvest at Luzern, Bern, and other
places.

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In the mean time Zwingli had been invited by the chapter of the Gross Münster, or collegiate church of Zürich, to be their preacher, which offer he accepted and found no objection to preach anything but the word of God as it is in the Scriptures. On Samson making his appearance at Zürich, he found there his old antagonist, and was of course refused admission. So much for Zwingli, though he returned there, but carrying with him, according to the account of Stettler, in his Chronicle, about 800,000 crowns. This was in 1519.

Zwingli, from his opposition to the sale of indulgences, was led to investigate other questionable practices of the Roman Church. In the descent of the Gospels was corresponded on these matters with several men of learning in other parts of Switzerland; Henry Lovit, of Glarus, styled Graeurnus; Kopfbin, who Latinized his name into Capito, according to the fashion of the times; Haußenschmied, of Basle, called Oediamannus; Henry Bullinger of Brenngarten; Thomas Wyttunbach, of Bienne; and Berechtheud Haller, of Bern; all of whom preached against indulgences, and against the multiplicity of external forms in worship. They all insisted upon the propriety of reading prayers in the vernacular language of each country, and they recommended that religious instruction should be made clear, intelligible, and accessible to all. By degrees they were led on to gainsay the right assumed by the see of Rome to decide upon questions of ecclesiastical polity. Erasmus of Rotterdam, who was living at Basle, and who had gone along with them in exposing and ridiculing various superstitious practices and other clerical abuses, stopped short when his friends demanded a reform in the eclesiastical polity. They were not then catholic. His brother John was in Italy; his name was Anglerius.) The court of Rome, whose attention was engrossed by Luther's German schism, had hitherto taken little notice of the Swiss controversy, but now it began to threaten the innovators with excommunication. The bishop of Basle, having forfeited the protecting of the new doctrines, and the Mendicant orders laid charges of impiety and sedition against Zwingli before the magistrates of Zürich. Zwingli published his defence under the title of Apologiæ Crucis, in 1522, copies of which were rapidly sold. The eye of the see of Rome was fixed upon the town-hall, as a nest of the zealously and increasingly appearance against Zwingli; Luther had just been condemned at Worms as a heretic, and was obliged to conceal himself. But Zwingli lived in a republican country, where he had less to fear from pope or emperor.

In January 1523, the canton of Zürich appointed a conference to be held at the town-hall, to which all the ecclesiastics of the canton were invited, for the purpose of hearing the exposition of the new doctrines and the sentiments of their opponents. Zwingli published a list of articles to be discussed in the colloquy. As these form the main subject of the separation of the Swiss reformers, or Evangelicals, as they began to style themselves, from the church of Rome, I will quote the paragraphs, with the gloss on them of Dr. Zahn, if I have an error," said Zwingli, "to assert that the Gospel is nothing without the approbation of the church, and to value other instructions and traditions equally with those contained in the Gospel. The Gospel teaches us that the observances enjoined by the men do not avail to salvation. The mass is not a sacrifice, but a commemoration of the sacrifice of Jesus Christ. The power assumed by the pope and the bishops has no foundation in Scripture. God has not forbidden marriage to any class of Christians; the double to be united together in matrimony has become the cause of great licentiousness of manners. Confession made to a priest ought to be considered as an examination of the conscience, and not as an act which can be absoluted. To give absolution for money is simony. Holy Writ says, 'Let a man withdraw from a heretic.' God alone knows the judgment which He reserves for the dead; and as He has not been pleased to reveal it to us, we ought to refrain from indirect conjectures on the subject. The jurisdiction devolved by the law on the secular magistrates, to whom all Christians ought to submit themselves. No person ought to be molested, for his opinions; it is for the magistrates to stop the progress of those which tend to disturb the public tranquility."

On the day fixed for the conference, the Council of Two Hundred, presided over by the burgomaster, assembled in the town-hall, whither the ecclesiastics of the canton, Zwingli included, repaired, together with a great number of spectators. The bishop of Constance had seen Faber, his vicar-general, accompanied by several theologians. They had been sent by Emperor Charles V., investigating the motives which had induced the government to convok the assembly, for the sake of becoming enlightened by a public discussion on the questions which excited the church and unsettled the consciences of the reformers. But it seemed improbable that the coun-

trines of Zwingli and his friends as heretical, to state the arguments against them. Faber however declined entering upon particular points of controversy, but desisted on the necessity of union in the church, and of obedience to the magistrates. He then asked the magistrates, if they knew the Holy Spirit; on the evils of heresy, and on the audacity of turbulent men who excited contentions and schism. As to those who appeal to the Scriptures in the three languages," said he, "I reply that it is not sufficient to oppose the sacred writings, but that it is necessary to understand them. Now the gift of interpretation is not one which is given to all. I do not boast of possessing it: I am ignorant of Hebrew; I know little of Greek; and, though I am sufficiently versed in Latin, yet I do not pretend to be able to ordain or proclaim the precept of assuming the office of a judge on questions concerning salvation; these can only be decided by a general council, to whose decisions I shall submit without a murmur; and which will become all the more irrevocable when it will be seen that there is no excommunication of one church by another, that each church has the right to interpret the Bible for itself, that no one is able to teach us the rules of interpretation, that we must consult the church and the ancient fathers in order to discern the right meaning of the text. To this Zwingli replied, that if by the church Faber understood the popes and cardinals, the historical records of many of them showed that they could not have been enlightened by the Holy Spirit; that if he meant the councils, he was placing too much authority in them; and if he was forgetting how many of those assemblies had accused each other of bad faith and heresy. Even the fathers of the church, observed Zwingli, 'cannot be regarded as unerring guides, since they often do not agree among themselves.' Zwingli, therefore, was bound to have different opinions on important points.

There certainly is a church that cannot err, and is directed by the Holy Spirit. This church is composed of all the true believers united in the bonds of faith and charity; but for the identity of the church, this is the only church that can be formed by the union of the true believers, and has the rest of the churches, which have in their own, if it do not assemble with pomp, it does not issue its decrees after the manner of the kings of the earth; it has no temporal reign; it seeks neither honour nor dominion: to fulfill the will of God is the only care which it can be induced to undertake on the invocation of saints and other points in debate, but it was no more than a desultory conversation, as the two parties did not meet on common ground; and the remarks of Zwingli, though they were arguments drawn from Scripture; while Faber chose has from the decisions of the councils and the traditions of the church. At last the burgomaster dissolved the meeting, but the council remained assembled; and after some deliberation, Faber was permitted to come among them. He was convicted of heresy nor refuted, should continue to preach the Gospel as before; that the pastors of the town and territory of Zürich should ground their discourses on the words of Scripture alone, and that both parties should avoid all personal reflections and reprimands. The forms of worship remained unchanged for the present, mass continued to be said, the images remained, but more frequent and more scriptural sermons were preached for the instruction of the people. Some of the more impatient partisans of Faber, however, ran headlong down a large crucifix which stood at one of the gates of Zürich, the culprits were arrested and charged with sacrilege. Zwingli blamed them for committing an act of violent innovation without the authority of the magistrate. He said, 'If they could not be called sacrilegious, as images ought not to be objects of religious worship. This gave rise to much debate in the council, which at last convoked a second conference, for the clergy to decide whether the bishop of images was authorized by the Gospel, and whether the mass ought to be retained. This conference was held in October, 1523. About nine hundred persons were present, including most of the clergy of the canton of Zürich. The council had invited the other cantons and allies of the Confederation, as well as the university of Basle, to send their deputies, but Schaffhausen and St. Gall alone answered the call. Zwingli and his friend Leo Juden ex
plained and supported their theses, viz. that the worship of images was unscriptural, and that the mass was not a sacrifice. The prior of the Augustines, after much de-
sate discussion, and that he could not refute Zwingli unless he were allowed to quote the canon law. The con-
ference lasted three days, but was not productive of any new argument against the Reformers, who had full time to explain their doctrines and to produce a deep impression on the minds of the prelates, which, with the favour of the Council, closed the meeting, and adjourned its own decision to the following year.

During the interval the council applied to the bishops of Constance, Basle, and Coire, begging of them explicitly to declare whether they were disposed to support Zwingli and his doctrine. The bishop of Constance alone sent to the council an answer that the use of the mass, which however contained nothing more than the usual reasonings of the Canonists in favour of whatever had been before urged by the church. Zwingli wrote an answer in order of the council, condemning the use of images, the invocation of saints, the exhibition of relics in churches, and the ex voto offerings. At the beginning of 1524, the Great Council ordered all the pictures, altars, and ornaments to be removed from the churches, allowing those which were the gift of private individuals to be restored to them or their descendants. Thus Zürich was the first canton in Switzerland which openly embraced the principles of the Reformed Church, Basle, as part of Glarus and Appenzell, followed some years later. In January, 1525, the mass was finally abolished at Zürich; and on Easter Sunday of that year the Lord's Supper was celebrated according to the simple form suggested by Zwingli, and which is the same as that observed in the Reformed churches of Switzerland and France to this day.

The next thing was to provide for the instruction of the people, and to find funds for that purpose. The canton of Zürich, of which Zwingli was a member, was a very wealthy body: it had its own fiefs and jurisdictions, and was independent of the council. Zwingli reasoned with his brother canons on the propriety of allotting a part of the amount received for the purpose of education, and on the expediency of doing this of their own accord, without waiting for the lay power to interfere. A majority of the chapter having recognised either the justice or the prudence of concele-

sion, a convention was agreed, among the chapters and the council, by which the former resigned its regalia of feudal jurisdiction and immunities to the state, swearing allegiance to the council as its sovereign, retain-
ing at the same time the administration of its own revenues, or, what is nearly the same thing, appropriating to the salary of spiritual pastors for the town. These canons who were capable of performing pastoral functions should be employed as such, and those who were old and infirm should be relieved of their duties; and the churches and places were not to be filled up, and the revenues of their benefices were to be employed in founding professorships for the gratuitous instruction of the people. A small minority of five canons protested against the convention, alleging the authority of the pope; and, not choosing to subject themselves to the lay authority, they quitted Zürich and retired into the Roman Catholic cantons. The abbess of the Frauenmünster and her nuns followed the example of the chapter; and reserving pensions for themselves during life, they contributed to the maintenance of the clergy and the propinquitous villeges. The surplus revenue was employed to found a seminary for candidates for the clerical profession. The convicts of the mendicant orders were afterwards suppressed by order of the council, the aged and infirm monks were relieved from the care of hospitals, and the habit of one of the convents, and the others were placed in various trades and professions. The convent of the Dominicans was transformed into an hospital for the sick. The reformers Augustus was into an asylum for the destitute. In every instance the property of the church was not swallowed up by the treasury nor embezzled by grasping individuals. It was guaranteed by the state, and made into a distinct fund for the purposes of education, religion, and charity. Dignity and profit were respected, and a decent regard was observed towards the feelings and prejudices of the old occupants.

of secularization of church property, so very different from the system of spoliations and plunder pursued in other countries, then and in our own days, even by states calling themselves Roman Catholic, unless it be the fate of the Swiss reformation, for the other reformed cantons generally acted upon the same principle of honesty that Zwingli proclaimed and enforced at Zürich.

Zwingli was commissioned by the government to orga-
nize a system of religious instruction, and to awaken the intelligence of the age. He reformed the public schools, appointed new professors for the classical languages, and founded an academy for theological studies. He appointed Conrad Pellican, a native of the same place, wittenbroock, to the rectory of Zürich, and John Collins, of Luzern, to that of Greek: this was in 1526.

The Anabaptists, a fanatical sect, the wild offshoot of the Reformation, who among other vagaries wished to establish a community of goods and a commonwealth independent of magistrates or government, made their appearance in the canton of Zürich. Zwingli had several conferences with some of their leaders; he tried to con-
vince them of the impropriety and impracticability of their schemes, but all to no purpose: disturbances were ex-
icted, the Anabaptists, being warned by the Council, refused to submit; they stirred up the ignorant people to acts of violence, until the government was obliged to resort to measures of severity in order to restore tranquility.

Zwingli did not attend the conference held at Baden in Aargau, in 1528, in presence of the deputies of all the cantons, in which Eckius, chancellor of the university of Ingolstadt, challenged the theologians of the Reformation. The Council of Zürich, in which Zwingli had a majority, and there was a manifest intention of seizing his person and

condemning him as a heretic. Oecolampadius, who was less known and less obnoxious to the Romanists, undertook to defend the doctrines of the cantons being Roman Catholic, the majority of the Reformers, and of the Zürich church, and opposed the resolutions of Eckius and Faber, grand-vicar of the bishop of Constance, to the effect that Zwingli and his adher-
ents should be considered as heretics, and as such ex-
communicated, and it condemned all the Anabaptist doctrines, or worship, and forbade the sale of heretical books. The cantons of Bern, Zürich, Basle, Schaffhausen, Glarus, and Appenzell protested against this decision; but the Roman Catholic cantons began to act upon it, and arrested and turned to death, all several of the Reformed preachers within their territories.

At the beginning of 1529 Zwingli repaired to a con-
ference held at Bern, by order of the senate of that canton. He was attended by Oecolampadius, Bullinger, Collinus, Pellican, and many of the chief Zürich church officials at Strassburg. The conference lasted nineteen days, and as it was laid down as a preliminary principle that no argu-
ment would be admitted which was not grounded on a literal interpretation of the Scripture, the latest Reformed doctrines obtained the advantage over their opponents. The consequence was that the important canton of Bern publicly embraced the Reformation.

In September, 1529, Zwingli repaired with Oecolampa-
dius and others to Marburg to hold a conference with Luther and Melanchthon. They agreed upon the principal points of faith, and signed together fourteen articles, containing the essential doctrines of their common belief: they only differed upon the subject of the Eucharist. Zwingli, in his 'Commentary on True and False Religion,' had asserted that 'the outward symbols of the blood and body of Christ undergo no supernatural change in the Eucharist.' The grounds of this controversy between the Zürich church and the Church of Rome are examined under the heads Reformation and Sacraments. Zwingli and Luther, after much discussion, parted, still in controversy, but not in anger. Zwingli was averse from dogma-
ticism, and it did not enter into the views of the Church. In his 'Exposition of the Christian Faith,' which he addressed shortly before his death to King Francis I., while he admits the necessity of justification by faith for all those to whom the Gospel has been made known, he cast no reflections on the imperfect instruc-
tion against those who have not been acquainted with the Scripture, and he expresses his belief that 'all good men

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who have fulfilled the laws engraved on their consciences, whatever age or country they may have lived in, will partake of eternal felicity.'

In the year 1531, after several angry and hostile demonstrations between the Roman Catholic and the Reformed cantons, war actually broke out. The Reformed cantons under the leadership of John Calvin in Geneva, the city and the church he had reformed, did not want to be subject to the secular power of which the bishop or governor was in charge. The Roman Catholics complained of the interference of Zurich with the territories of the Abbey of St. Gall, where the commissioners from the pope claimed liberty for theirmons. These grounds of the dispute were of a mixed nature, resulting from religious and political jealousy. The Catholic cantons broadly refused liberty of conscience to their citizens or subjects, on the plea that it was contrary to the doctrine of their church. Bern and Zürich came to the determination of stopping the supplies of provisions which Luzern and the forest cantons were in the habit of procuring from or through the territories of the other two, forbidding the citizens of the Western cantons from entering Bern or Zürich and enforcing a kind of blockade which was severely felt by the mountain cantons, which, being chiefly pastoral, depended for their supply of corn, salt, and other necessaries on the markets of their more prosperous neighbours. The town of Zug, Schwyz, Uri, and Unterwalden declared war against Zürich and Bern, and their troops advanced to Cappel, a village on the road from Zug to Zürich, and within the territory of the latter canton. The council of Zürich, which, however, had frequent disputes among themselves, did not expect to suffer an attack. A few hundred militia were posted at Cappel, and a body of about 2000 more were ordered to reinforce them in haste; and Zwingli received orders from the council to accompany and command the army, in the absence of the absent-minded general of the Reformed Churches of Switzerland, as distinct from that of Protestants, which applies more particularly to the German Reformed Churches, in consequence of the protest delivered to the Diet of Spires, in April, 1529. It ought to be observed however that the Lutherans were not alone in signing the protest, as many towns of Germany and the Landgrave of Hesse, whose tenants were like those of the Zwinglians or Sacramentarians, also joined in it; so that the affair was more like an attack of the Reformed Church, and not of the Lutheran Church, but applies in an historical sense to the German reformed churches in general. The Swiss had no participation in the protest, which was a political act of the German States. An account of these various denominations is given elsewhere of the cantons of Luzern and Bern, who, being in a state of war with each other, did not attack the mountain cantons.
ern, Schaffhausen, Mulhausen, Bienna, and St. Gall gave their ascent. The Evangelical portion of Appenzell was already agreed in their tenets with the state of Zürich. Notwithstanding all its alliances, Basle had an old formulary of its own, which did not materially differ from Bullinger's confession, and was only in the following century that it formally acknowledged the Helvetic confession of faith, as it was now called. This was accomplished in 1536, and the formulary was sent in their signatures. The churches of the intimation, those of Poland and Hungary, signed also the Helvetic Confession. The Reformed churches of France, through political and other reasons, drew out a confession of faith which was annexed to the book of sacrificial rites. (Vulliemin, Histoire de la Confédération Suisse, Continuation de Müller, Gloutz, et Holinger.) An abstract of the Helvetic confession of faith given in the appendix to the History of Switzerland by Mr. Mr. Z. The authorities on which the article is based are the Swiss churches.

On the abstruse topic of predestation, it affirms that 'God, out of his wisdom, has predestined or chosen some eternally, freely, of his own mere grace, and without regard for persons, the righteous whom he intends to save through Jesus Christ,' but at the same time it contains an apologetic judgment concerning the salvation of any individual or class; and it says that we must hope favorably of every one. 'If we hold communion with them, and assist in the processes of the church, he be ours and we his, we then have a tolerably certain proof that our names are written in the book of life.'

The appellation of Calvinists has occasioned some confusion with regard to the Reformed churches. Calvin, who acted at once as an ascetic and a professor, was a man of intense and elevated character, and the Reformation in Switzerland has its analogy in the Reformation in France. Calvin has had no influence over Switzerland, where the Reformation was established long before his time; and it is only by the Society for the Diffusion of Useful Knowledge that the Reformed churches of Switzerland have been called Calvinistical. [Calvin and Calvinism.]

ZWOLL. [OVERYssel]

ZYGZANIDÆ, a tribe of insects belonging to the order Lepidoptera, placed by Linnaeus with the Sphingidae on account of the resemblance of their antennae to those of that family. Lattreille divided them into two groups, according to the forms of the antennae, which in the one are simple, and in the other are branched. The type of each is a case, and at least in the males. Seasia and Zygaena are examples of the latter; Procis and Aglaope, of the latter.

The genus Zygaena includes some very beautiful insects, which, while they resemble moths in general aspect, fly during the day; and they are remarkable not only for the beauty of their colors, but for the brilliance of their wing margins. Their caterpillars have six feet, are olive-colored, and are not furnished with the coriaceous tubercle which those of the Sphingidae bear on the last ring of the body. Unlike the last-insect, these do not bury in the ground to undergo their metamorphosis, but are entirely viviparous. The seed, a single globule, is the only structure, and it is enclosed in a globe by the sepals of the flower, which is discharged in the shape of a winged seed when mature.

After conjugation the granules of endosperm, which form the spiral lines, appear, and collect into masses, which become the spores from which the future plant is reproduced. When the plant decays, these spores float about in the air, and, if deposited on the ground, are able to develop into plants by themselves. The young plant is developed from them. One remarkable phenomenon attending the liberation of these spores from the parent tube is the fact that many of them assume the habits and characters of insectivorous animals. Thus, when viewed under the microscope, the moving spores, or zoospores, as they are called, are generally of a green or yellow color, and of a more elongate form than the spores. Their motion through the water is somewhat different from that of the zoospores of Spirogyra. They are of a very small size, and that these are produced independent of the act of conjugation. Besides these organs, Mr. Hassall has described minutely a round body with a stellate structure, seated in the centre of the tubes of various species of Zygaena. This body he calls a cytoplast, but it seems to have another claim to such a designation than its having in the later stages of its development the appearance of some of the larger cytoplasts of higher plants. Mr. Hassall also describes a vascular structure existing between the granular masses which forms the base of the florets of the filaments of the Zygaena. This structure however is not

Z. zygaenae, with dark green filaments, parallelly joined, and the articulations with numerous arched spines. This is a very common species, and is found abundantly in the vicinity of Mr. Hally's observatory.
at all evident to other observers, and, as well as the deductions made with regard to its function, requires further investigation.

In the 10th volume of the Annals of ‘Natural History’ Mr. Hassall has described seventeen additional species of Zygnea, besides the three which produce their spores without conjugation. These have been chiefly found in ponds and ditches in Hertfordshire and Essex.

(Hooker's British Flora, vol. ii.; Hassall's papers in the 10th and 12th volumes of the Annals of Natural History.)

ZYGODACTYLLI, the term used by M. Temminck, M. Vielliot, and others to designate those perching birds which have their feet composed of two anterior and two posterior toes, the external toe of the two last mentioned being capable of a direction either forward or backward. The Parrots, Woodpeckers, Toucans, Cuckoos, &c. belong to this group, which forms the first tribe of the second order (Syllocelo) of M. Vielliot, and the fifth order of M. Temminck.

ZYGOPHYLLACEAE, a natural order of plants belonging to Lindley's Gynobasic group of polypetalous Exogens. Seventeen genera are referred to this order, and the number of species is not great. They are herbs, shrubs, and trees, having a very hard wood, and the branches often articulated at the joints. The leaves are opposite, and are furnished with stipules, are seldom simple, mostly unequally pinnated, and without dots. The flowers are hemispherical, regular; the calyx is divided into 4 or 5 pieces, with concave or convolute whorls; the petals are unequilateral, alternate with the segments of the calyx, and a little longer; during aestivation they are very short and scale-like; the stamens are double the number of the petals and dilated at the base, sometimes naked, sometimes placed on the back of a small scale and hypogynous; the ovary is simple, surrounded at the base with glands or a short spinous disk, more or less deeply furrowed with 4 or 5 cells; the ovules in each cell 2 or more, attached to the minor angle, pendulous or occasionally erect; the style is simple, usually with 4 or 5 furrows; the stigma is simple or with 4 or 6 lobes; the fruit is capsular, sometimes fleshy, 4 or 5 angles or wings bursting by 4 or 5 valves bearing the disseminules in the middle or into as many close cells, and the seeds are not so many in number as the ovules, and are either compressed and sebaceous when dry, or ovate and smooth with a thin herbaraceous integument; the embryo is green with a superior radicle, foliaceous cotyledon, and a whitish albumen of a horny and carnitious texture.

This order is nearly related to Oxalidaceae and Rutaceae; from the former however it is distinguished by a multitude of characters, and from the latter it is distinguished by its fruits being furnished with stipules, and being without dots. Lindley observes, 'With Layard's genus they ascend in the stamens springing from the back of an hypogynous scale, a structure well worth more attentive consideration than it has yet received: something analogous to it will be found in the genus Tribeasus.'

The great bulk of the species of this family are found distributed throughout the temperate regions of the globe; they are not, however, wanting in the tropics. The largest number are found in America, but the order has representatives throughout all the quarters of the earth, and even in New Holland. Many of the species are known as yielding timber, medicinal secretions, and ornamental plants. The following are the characters of the most important genera:

1. Leaves opposite.

**Tribulus** (from τρίβολος) : carpels 5, 1-celled, 1-seeded, indesicate, beset with prickles on the outside; style absent; 5 sepals, 5 petals, and 10 stamens.

Ehrenbergia (named after C. P. Ehrenberg, a celebrated German naturalist): capsule 10, 1-seeded, indesicate, crested.

Fagonia (in honour of Mr. Fagon, physician to Louis XIV.), and a patron of Adanson): the capsule sessile, 5-celled, 5-valved, and many-seeded; the style simple, and the base of the calyx dilated; the stigma single; the sepal 5; the petals 5; and the stamens 10.

Roperia (named after J. Roper, a German botanist, author of a monograph on the genus Euphorbiurn): capsule 4-styled, 4-valved, and 4-celled; the style and base of the calyx joints, and the base suppressed from 5 petals; the stigma single; the sepal 5; the petals 5; and the stamens 10.

Guaiacina, from Guaiac (a native name): capsule sub-stipitate, 5-angled, 5-valved, and 5-celled; from 2 or 3 2- or 3-celled from abortion; 10 stamens; 5 petals; 5 styles; and the seeds solitary in the cell.

2. Leaves alternate.

Biebersteinia (in honour of F. M. Bieberstein, a Russian botanist, author of 'Flora Tauro-Caucasia'): carpels 3, corollate at the base, 1-seeded; petals 5; sepals 5; stamens 10; styles 5, joined.

**Melianthus** (from μελις and ηνος, honey-flowers): capsule 4-lobed, with 4 cells, which are 1-seeded from abortion; calyx 5-cleft, unequal, the lower segment gibbous; petals 5; the stamens 4, of which 2 are connate; style single, crowned by a 4-cleft stigma.

The species of the genus Tribulus are diffuse herbaceous herbs with abruptly pinnate leaves and membranous stipules, with yellow or white flowers seated on axillary pedicels. This genus, with some others belonging to this natural order, was included by Jussieu in his order Rutaceae.

* T. cistoides, Cistus-like Caltrops, has leaves with 8 pairs of equal leaflets, which are silky beneath, with pedicles the length of the petioles. This plant is a native of South America and the West Indian Islands. It has large yellow flowers, resembling those of the rock-rose, which give or a pleasant fragrance. It is abundant about Kingston Jamaica, where it is called turkey-flower, and is cultivated in the gardens on account of the beauty of the flowers. Fowls are said to be fond of this plant, and it is supposed to fatten them, as well as to heighten their flavour.

* T. terrestris, Common Caltrops, has leaves with usual pairs of equal leaflets; the pedicles shorter than the pedicel and the carpels four-celled. This plant is found on the South, Europe, of Senegal, and of the Mauritius, in barren sandy places. In the South of Europe it is so abundant in the arable land of southe parts, that it is troublesome to the cattle on account of the angles running into their feet. The French give to this plant the name of La Croix de Chevalier. The other species of this genus are found in Egypt, North America, Africa, and the East Indies. All of them form pretty plants for cultivation.

**ZYGOSUS**

The seeds of the annual speci...
should be sown in a hotbed in spring, and the plants may be placed out on the open border in a warm sheltered situation, about the middle of May. The perennial species may be propagated either by cuttings or seeds, and will grow very well in a mixture of loam and peat.

In cultivation they can only be propagated by seed. It is a native of Syria and parts of the autumn in some rich light soil, and then placed in a frame, or the winter. In the following spring they may be placed in pots for the greenhouse, or in the open border. The shrubby species do not usually live more than three or four years.

There are two species of *Riparia*, both of them natives of New Holland. They are decumbent shrubs with small yellow flowers. They will grow in a soil composed of loam, peat, and sand, and cuttings will root freely when planted in sand under a hand-glass.

*Zygophyllina*, the Bean-Caper, is the most extensive genus of the order, comprising about twenty-seven species. They are either herbs or shrubs, with membranous or plicate leaves, or pinnate leaves, with red, white, or yellow flowers with a dark base.

*Z. simplicifolium* has simple sessile, cylindrical leaves. It is native of Egypt and Arabia, and frequently met with in the deserts of those countries. It has yellow flowers, and is called in Arabia *Germad*: it is esteemed a good remedy in diseases of the eyes, and the bruised leaves mixed with water are used for this purpose.

*Z. tubago*, Common Bean-Caper, has stalked leaves, obovate leaflets, erect pedicels, a smooth calyx, and unlobed petals. It is a native of Syria and other parts of the Arabian Peninsula. It has yellow petals of a copper-brick colour at their base. This plant is a common herbaceous perennial in our gardens, and was cultivated in Great Britain by Gerard as early as 1596. This plant is supposed by some writers to be the *Telephium* of Dioscorides.

*Z. fistulosa*, Petit Bean-Caper, has stalked leaves, obovate leaflets, nodding flowers, a downy calyx, and cut reflexed petals. It is a native of the Cape of Good Hope, and has orange-yellow petals with a purple spot at the base. The plant gives out a strong foxy-like scent, which renders the house in which it is grown very offensive, and on this account it is seldom grown. It was introduced by Mr. Marson in 1790.

*Z. coccineum*, Scarlet-flowered Bean-Caper, has stalked leaves; cylindrical, fleshy, smooth leaflets; erect pedicels; acuminate petals; and cylindrical capsules. This plant is a native of the deserts of Egypt and other parts of North America. Although abundant, all kinds of cattle and even camels refuse to touch it.

In the cultivation of these plants, the perennial species may be propagated by cuttings, which will root freely in a pot of sand under a hand-glass. When the plants are grown, they will thrive in a soil composed of loam and peat and sand. The annual species may be propagated by seeds sown in pots of the same kind of soil, and placed in a hotbed. The common Bean-Caper is the only species that will grow in the open air. It should be planted in a dry situation in a light soil. It can however be only propagated by seeds, which are only occasionally ripened in this country. The seeds should be sown in a pot and placed in a frame, and when the plants are four inches high they should be planted out in an open border.

There are six species of the genus of *Guaiacum*, five of which are trees. They are remarkable for the hardness of their wood, and have usually blue flowers.

*G. officinale*, Lignum-vitae, or Guniaecum, has leaves with two pairs of obovate or oval blunt leaflets; twin peduncles, and 2-celled fruit. This plant attains a height of about 30 feet, and is a native of Jamaica and St. Domingo. The wood is exceedingly hard, and is known in England under the names of Brazil-wood and Lignum-vitae. It is much used in medicine. [*Guaiacum officinale*].

*G. sanctum*, Holy Lignum-vitae, has leaves with five or seven pairs of oval, blunt, mucronate leaflets; the petals are orange-yellow, the pedicels fringed; the capsule 5-celled. It is a native of South America, and is abundant in St. Domingo, New Mexico, and Brazil. This tree attains a height of about 20 feet, and, according to Hernandez, has blue wood. It is called in some of the West India Islands Bastard Lignum-vitae. It has also been used in medicine, in the same diseases as the *G. officinale*, but more especially for syphilitic disease.

*G. arboreum* has leaves with from seven to fourteen pairs of oval, oblong, blunt leaflets, which are unequal at the base, and are usually alternate; and the pedicels and branchlets somewhat pubescent. It is a native of Carthageana, Guadaloupe, and Cumania. It was first described by Jacquin under the name of *Zygophyllum arboreum*. This tree is called by the natives of Cumania *Guai-a-cum*, which is in fact the name of all hard woods among them. This tree is one of the largest and handsomest of the order, attaining the height of 40 feet, and terminating in a beautiful head of branches.

In cultivating the species of *Guaiacum*, the ripened cuttings, if taken off at a joint, will root, and may be planted in a pot of sand under a hand-glass, which should be exposed to the influence of heat. Every part of these plants is brittle, and should be transplanted when the fibres are not broken.

The species of *Biebersteinia* are perennial herbs, beset with glandular hairs and having unequally pinnate leaves. There are two species: the one sweet-scented, a native of the Altai Mountains; the other a native of various districts of Persia.

The species of *Melianthus*, Honey-flower, are shrubs with unequally pinnate leaves, having a strong odour when bruised, and racemes of brown or yellow flowers.

*Melianthus major*, Great Honey-flower, has glaucous leaves, smooth on both surfaces, with large stipules joined to the petiole. Like the two remaining species, *M. minor* and *M. comosus*, this is a native of the Cape of Good Hope. All three species are shrubs, and attain a height of from four to six feet. They will thrive well in any light soil, and may be propagated by cuttings, or by suckers, which they throw out abundantly from the root. *M. major* may be grown in the open air against the wall, but it requires a mat in the winter.

(Don's Miller; Loudon, Cyclopediad of Plants; Lindley, Natural System; Sir J. E. Smith, in Rees's Cyclopediad.)
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